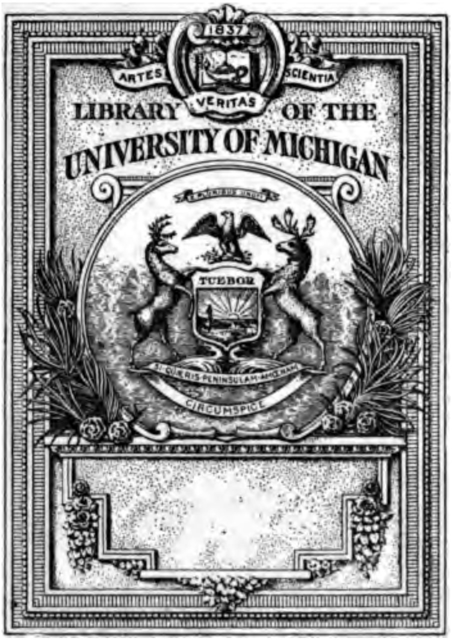
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# PSYCHOLOGY IN EDUCATION

*DESIGNED AS A TEXT-BOOK, AND FOR THE USE OF THE GENERAL READER*

BY

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# PREFACE.

PSYCHOLOGY is the science of mind, — mind in whatever manifested. Its applications are numerous, — in biology, sociology, criminology, education, — and each application is rapidly becoming a specialty.

It is with psychology in education that this book is concerned. But although it is intended mainly and primarily for teachers, it is hoped that others whose business it is to educate the human mind, and to influence its growth, may find something herein that will serve them also. If the book aids in quickening an interest in mind study as applied to education, in the narrower or in the broader sense, its chief purpose will be accomplished.

RURIC N. ROARK.

KENTUCKY STATE COLLEGE, LEXINGTON,
*May*, 1895.

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# CHAPTER I.

## INTRODUCTION.

THIS book is written for the *average teacher*, and because of the deep interest that the average teacher — the private in the grand army of education — is taking in the subject.

In its method of presentation it combines such practical experience as the author has gained from many years' teaching of teachers, with the knowledge of their needs which abundant opportunities for observation of these have given. Almost every paragraph was written with the thought constantly in mind, "What application can be made of this in the details of everyday school work?"

Psychology sustains the same relation to the science of education that anatomy, physiology, and pharmacy sustain to the practice of medicine. It is as necessary that the teacher should know something of the mind's activities as it is that the physician should know the bodily organs and their functions, their normal and their abnormal conditions.

**Relation of Psychology to Education.**

The teacher should be able to tell why he teaches arithmetic or history, and why he teaches them in a certain way, as the physician should be able to tell why he prescribes dieting and exercise for certain ailments, and this or that drug for other diseases. Just as the

physician should know the specific effect of any medicine upon the organs of the body, so the teacher should know the effect of a given school exercise or branch of study on the different faculties of the mind.

It seems self-evident that no real science of education is possible, except as it is founded on psychology, and that the work of the individual teacher, from the kindergarten to the university, will be valuable in proportion as it is directed by some intelligent comprehension of the activities of the mind and the laws of its growth.

**Points to be noted.** Attention is asked to certain characteristics in the treatment of the subject, as herein offered.

1. The full and logical outline, by which the reader may guide his study of this and other similar books, and which presents in compact, connected form the several topics to be discussed.

2. The care with which all terms technical to the subject-matter are defined.

3. The sharp distinction drawn between the *faculties* of the mind, and the *operations* which they, singly or in groups, perform.

4. The constant emphasis laid throughout upon the necessity and the means of carrying psychology into the daily work of the school.

5. The avoidance of *speculative* metaphysics, beyond a few suggestions which may serve, perhaps, to stimulate those who desire to do so to pursue the study in other than its educational relations.

Technicalities have not been multiplied. The terms used are in the main those in accepted use by other writers on mental phenomena. When new terms are

introduced, or old ones used with changed meaning, careful definitions are given, so there should be no occasion for confusion. There is no room for dogmatism in psychology; and, though some of the definitions may appear dogmatic and final, they are merely intended to present concisely the writer's views of present knowledge, and to afford some assistance in constructing a psychological terminology. The writer does not believe that difficult language is in any degree necessary in a psychological discussion.

**Terms used.**

Although it is remembered that the mind is a *unit*, and has no divisions, yet the term *faculties* is used, because there is no better term by which to express the fact that the mind manifests its activity in different ways. Dr. Laurie says, in his "Institutes of Education," "It seems to me quite unnecessary to abandon the use of so useful a word." Dr. Ladd indorses the term by using it, and so also does Dr. Van Norden. I am content to be in such excellent company, and shall use *faculties* as it has always been used, to name collectively the different phases of the mind's activity.

**Methods of Study.**

Man gained his first knowledge of the material world through observation of it. So, when man first began to study himself, he turned the mind in upon itself, and observed its phenomena. This observation of self by self is called *introspection.* There are also the *observational and comparative*, the *laboratory*, and the *classroom* methods of studying mental phenomena.

**Introspection.**

Introspection is a valid and valuable method of investigation, for the mind presents phenomena which the mind can as truly observe as it can observe the changes going on in the material world.

The mind can watch itself reasoning, or enjoying, or desiring, as well as it can watch a laboratory experiment or an eclipse of the moon. Its interpretations of what it observes are just as trustworthy in the one case as in the other, and the mental phenomena are almost as classifiable as the material phenomena.

The habit of introspection — of observing one's own mental states and acts — is hard to form, and requires effort and practice. The same may be said, however, of the habit of correct observation of any class of phenomena. But, once formed, the habit becomes one of the safest and most helpful guides in the study of psychology.

**Observational Method.**

As a corrective to the personal bias that inheres in the introspective method, and as a positive aid in collecting data and noting points of view that one's own mind cannot furnish, the *observational* (or comparative) method is excellent. Since we are all the time surrounded by our fellow-minds, this method is as easy to use as the introspective. Study people's beliefs, habits, conduct, and character. Observe their environment, their methods of reasoning about common matters, and the causes of their acts. Compare their apparent standpoint with your own, and try to put yourself at their point of view. In this way one's knowledge of practical psychology is greatly increased, and a habit is formed of more liberal and generous treatment of those from whom one must differ.

**Comparative Method.**

But the comparative method has a much wider application than what has just been said about it would indicate. Our knowledge of anatomy and biology, of language and art, has been greatly and rapidly increased and liberalized by

the comparative method of study, — putting two or more anatomical structures, or plants, or languages, under observation at once, and noting their likenesses and differences. So in the study of mind much has been gained, and vastly more is to be gained, for the science of psychology, by comparing the methods of thought and the motives of action of one people or race with those of another; and the psychologist of to-day does not consider it beneath him to make a careful comparative study of mind in the lower animals. The teacher can follow this example with much interest and profit.

**Laboratory Method.**

It is only within the past few years that the laboratory method of studying mind has come into use. There is a considerable and increasing number of well-equipped psychological laboratories in the United States. The laboratory method is concerned mostly with *physiological* psychology, which is, after all, only *physiology*, even though it be the physiology of the nervous system and the special organs of sense, — the material tools of the mind. And after physiological psychology has had its rather prolix say, causal connection of the physical organs with psychic action is as obscure and impossible of explanation as ever. Dr. Laurie very aptly says, "After all, *psycho-physics* can never be *more than physics*." But the laboratory method can be of excellent service in determining the material conditions of mental action, in detecting special deficiencies and weaknesses, and in accumulating valuable statistics along these lines.

It has been asserted that no science can claim to be exact until it can be reduced to formulas of weights and measures. The assertion begs the question for the

materialists. We shall probably never be able to weigh an idea or measure the cubic contents of the memory; but the rapidity with which ideas are formed or reproduced by memory has been measured in many particular instances, and the circumstances that retard or accelerate their formation or reproduction have been positively ascertained and classified. This kind of work has but begun. What it will bring forth that the teacher can use, remains to be seen.

Good teachers through all time have used what I have called the *classroom* method; but only in recent years has it been systematized, experimentally directed, and its results put upon record. It consists in experimental observations made upon the pupils of any grade, in their daily work in the classroom. To secure results that have value, the pupils should not be made aware of what is being done, or, at least, of the purpose of it.

**Classroom Method.**

These experimental observations may be made by any patient and observing teacher, upon such matters as the aptitude of pupils for certain studies; the comparative aptitudes of boys and girls, or of pupils of different social surroundings, for the same study; how pupils study, and why they study that way; the readiness with which different classes of facts are assimilated and remembered; the variation of mental power at different ages; the moral ideas of the pupils,—their notions of duty and of right and wrong. Much has been done along these lines of late, and the results of such observations and experiments have been set forth in various educational publications.[1]

[1] Teachers will find matter of much interest and value in such articles as these: "Tests on Memory and Senses of Children," Edu-

This last method of studying mind, and collecting data to help in the formation of a psychology that may be applied in education, is usable by any teacher. The best psychological laboratory is the schoolroom, and the teacher is rich in opportunity.

To use it intelligently, and to direct his investigations so that they shall serve the highest interests of his calling, the teacher must know what *education* is. And fundamental to every useful application of his data, when he has collected them, must be a clear and adequate concept of *teaching*.

**Education and Teaching defined.**

*Right education is such a preparation of the individual, in physical, intellectual, and moral capacities, as will enable him to secure the highest enjoyment from their use, here and hereafter.* This definition will hold for education as process and as product. The definition is not a selfish one, making education out to be a benefit to the one only who has it; for the "highest" enjoyment is found in the full, normal use of all the faculties of the body and mind in such way that others may be benefited also. Selfish enjoyment is not the highest enjoyment.

*Teaching is consciously doing three things,—instructing, developing, training.* Education is the broader term, and may, in its unlimited sense, be taken to mean the sum of all the influences, direct or indirect, that make the individual what he is. A distinction may properly be made between education in its unlimited sense, and *formal* education. The five great engines of formal education are (1) the home, (2) the school, (3) the press, (4) the pulpit, (5) the platform.

cational Review, New York, January, 1893; "What Posture indicates," Popular Science Monthly, November, 1892; "Child Study," Forum, February, 1894.

Teaching is more restricted in its meaning, and implies that an intelligent agent is selecting, directing, modifying, and combining right influences to produce a desired effect.

A man is *educated* by all the influences of his life. He may *teach* himself by putting himself under the influence of those surroundings and associations that will tend to make him what he wants to become.

**Instructing defined.** *Instructing is directly giving information — knowledge of facts, new ideas, and words — to the pupil.* This is the least part of the work of the teacher, and should be done only for the purpose of stimulating the desire for more knowledge, and of furnishing material that the pupil cannot economically get for himself. The teacher should not give information which the pupil, without too much waste of time, can secure by his own efforts.

The result of right instruction is useful *knowledge*.

**Developing defined.** *Developing is increasing, through use, the natural power of an organ or faculty; bringing out latent energies and capacities.* We may develop — increase the strength of — a muscle, memory, conscience, will. The result of development is *power*.

**Training defined.** *Training is causing an organ or faculty, by constant and carefully directed practice, to function rapidly and well, with the least expenditure of time and energy.* We may train the senses, the hands, the judgment. The result of training is *skill*.

To emphasize and illustrate the central idea of these definitions, some others are quoted: —

"Education seeks, by social stimulus, guidance, and control, to develop the natural powers of the child, so

as to render him able and disposed to lead a healthy, happy, and morally worthy life."—*Sully.*

"Education [teaching] is essentially the action of other human beings on the child, and this only so far as it is conscious and designed."—*Sully.*

"Teaching is simply helping the mind to perform its function of knowing and growing."—*Laurie.*

"Teaching is the process by which one mind, from set purpose, produces the life-unfolding process in another."—*Tompkins.*

The teacher is recommended to read the whole of Herbert Spencer's unequaled essay on education.

## CHAPTER II.

### A CLASSIFICATION OF MENTAL PHENOMENA.

$1^{1}$* THE PHYSICAL BASIS: THE BRAIN AND NERVOUS SYSTEM.

- $1^{2}$ **Central end organs: brain; spinal cord; ganglia.**
- $2^{2}$ **Connecting organs: nerves.**
  - $1^{3}$ **Afferent: carrying impulses in.**
  - $2^{3}$ **Efferent: carrying impulses out.**
- $3^{2}$ **Outer end organs: special sense organs; muscles.**

$2^{1}$ THE PSYCHICAL ELEMENT: THE MIND.

- $1^{2}$ **Conditions of effective mental activity.**
  - $1^{3}$ **Consciousness.**
  - $2^{3}$ **Attention.**
    - $1^{4}$ *Involuntary*
    - $2^{4}$ *Voluntary.*
    - $3^{4}$ *Expectant.*
  - $3^{3}$ **Habit.**
- $2^{2}$ **Faculties (powers or capacities) of the mind.**
  - $1^{3}$ **The intellect.**
    - $1^{4}$ *Presentative faculties.*
      - $1^{5}$ Objective: the physical senses.
        - $1^{6}$ Touch.
        - $2^{6}$ Muscular sense.
        - $3^{6}$ Temperature sense.
        - $4^{6}$ Sight.

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* The exponential figures in this table indicate the coördination of the respective subdivisions of the subject (see p. 175).

5[6] Hearing.
6[6] Smell.
7[6] Taste.

2[5] Subjective: the intuition.

2[4] *Representative faculty: the memory.*

1[5] Kinds or forms.
1[6] Involuntary: remembrance.
2[6] Voluntary: recollection.
3[6] Verbal.
4[6] Logical.

2[5] Functions.
1[6] To retain.
2[6] To recall.
3[6] To recognize.

3[5] Laws.
1[6] The law of use.
2[6] The law of interest.
3[6] The law of attention.
4[6] The law of repetition.
5[6] The laws of association or relation.
1[7] Association in time and place.
2[7] Association of sign and thing signified.
3[7] Association by similarity or resemblance.
4[7] Association of cause and effect.

3[4] *The elaborative faculties.*

1[5] Judgment: rational, reflective, relational.

2[5] Imagination: creative.

**2[3] The sensibilities (susceptibilities): motives.**

1[4] *The emotions.*

1[5] Physio-psychic.
1[6] Cheerfulness.
2[6] Melancholy.
3[6] Anxiety.
4[6] Indifference.

- $2^5$ Intellectual.
  - $1^6$ Surprise.
  - $2^6$ Wonder.
  - $3^6$ Admiration.
  - $4^6$ Happiness.
  - $5^6$ Sorrow.
  - $6^6$ Hope.
  - $7^6$ Fear.
  - $8^6$ Feeling of shame.
  - $9^6$ Feeling of the ludicrous.
  - $10^6$ Feeling of the beautiful: the æsthetic feeling.
- $3^5$ Moral.
  - $1^6$ Pity and sympathy.
  - $2^6$ Reverence.
  - $3^6$ Awe.
  - $4^6$ Conscience.

$2^4$ *The affections.*

- $1^5$ Benevolent: love.
  - $1^6$ Love of family, the basis of society.
  - $2^6$ Love of country: patriotism.
  - $3^6$ Love of mankind: philanthropy.
  - $4^6$ Love of God, the basis of real religion
- $2^5$ Malevolent.
  - $1^6$ Anger.
  - $2^6$ Hate.
  - $3^6$ Envy.
  - $4^6$ Jealousy.

$3^4$ *The desires.*

- $1^5$ Physical.
  - $1^6$ Desire for food, water, air.
  - $2^6$ Desire for rest and exercise
  - $3^6$ Desire for sleep.
- $2^5$ Intellectual.
  - $1^6$ Curiosity: the desire to know.
  - $2^6$ Self-love: the desire for approbation.
  - $3^6$ Ambition: the desire for power.
  - $4^6$ Imitativeness: the desire to be or do as others.

$5^6$ The social instinct: the desire for companionship.

$3^5$ Moral: the desire for harmony with God.

$3^3$ The will.

$3^2$ The operations of the mind.

$1^3$ Acquisition.

$1^4$ *Processes.*

$1^5$ Perception.

$1^6$ Faculties: the senses.

$2^6$ Products: percepts.

$2^5$ Conception.

$1^6$ Faculty: judgment.

$2^6$ Subprocesses.

$1^7$ Comparison and discrimination.

$2^7$ Abstraction.

$3^7$ Identification (classification).

$4^7$ Denomination.

$5^7$ Definition.

$3^6$ Products: concepts.

$1^7$ Qualities of concepts.

$1^8$ Clearness.

$2^8$ Distinctness.

$2^7$ Quantity of concepts.

$1^8$ Comprehension (intension).

$2^8$ Extension.

$3^5$ Retention: by the memory.

$2^3$ Assimilation.

$1^4$ *Processes.*

$1^5$ Conception.

$2^5$ Reasoning.

$1^6$ The faculty: judgment.

$2^6$ Methods.

$1^7$ Inductive.

$2^7$ Deductive.

$3^6$ Products: conclusions; new discoveries; truth.

$3^5$ Imagining or creating.

$1^6$ The faculty: imagination.

$2^6$ Process: creative combination.

$3^6$ Products: images; types; ideals.

$4^5$ Willing.

$1^6$ The faculty: the will.

$2^6$ Processes (steps)

$1^7$ Solicitation by desires, etc.

$2^7$ Selection by judgment.

$3^7$ Determination and execution by the will.

$3^6$ Product: character.

$2^4$ *The results of assimilation are knowledge; power; character.*

$3^3$ Reproduction.

$1^4$ *The inner process: creation.*

$2^4$ *The outer process: expression.*

$1^5$ Physical expression: physical character made manifest.

$2^5$ Intellectual expression: intellectual character made manifest.

$3^5$ Moral expression: moral character made manifest.

# CHAPTER III.

## THE PHYSICAL BASIS.

IT is not at all necessary to the purpose of an educational psychology that a minute discussion of *nerve physiology* be entered into. Only a brief summary of what is known regarding the physical basis of mind will be given here, therefore. All that is *known* regarding the subject may be stated fully in one paragraph: Mind as we know it rests upon a physical basis, which acts upon mind, and upon which mind acts. What the connection is between mind and that physical basis, or how this connection is made and maintained, is not known, and most probably never will be known.

**Physiology is not Psychology.**

Any text-book on the physiology of the sensitive system describes with more or less fullness the form, structure, and functions of the organs that constitute the physical basis of mind. But the hard fact remains,—a fact which the "new school" of psychologists seems to forget or not to perceive,—that the physiology of the nervous system is not *in any sense* psychology. Undoubtedly, a knowledge of physiology materially aids the student of psychology, but so does a knowledge of chemistry and physics. Yet the materialistic school of psychologists would doubtless be the first to smile at a "chemical psychology." In the concise words of Benedict, "Physiology will never *front the inner side* of a single sensa-

tion." Physiology cannot pass beyond nerve tissue and its physical phenomena, and it must be content to tell us what it can about these.

Whatever mind is, we know it in ourselves and in others only in connection with nerve matter. Some investigators have gone so far as to say that wherever there is living gray nerve matter there is mind, whether in animal or plant. It is easier to prove the statement true than to show that it is false. Whether it is true or not that mind is always associated with living gray nerve matter, it is true that it is not associated with anything else, so far as we now know.

**Mind in Nerve Matter.**

Nerve tissue has the peculiar property of irritability, by which may be understood the readiness with which it receives and transmits molecular disturbance from one point to another. For example, the finger is pricked with a needle: the point disturbs the molecules in the finger end of the nerve, and this disturbance is transmitted rapidly to the brain.

**Functions of Nerve Tissue.**

Nerve tissue is of two kinds,—*gray* or cellular, and *white* or fibrous. The functions of the gray matter seem to be to *receive*, to *generate*, and to *transmit*, nerve disturbance: the sole function of the fibrous matter seems to be to *transmit* nerve disturbance.

The general arrangement of nerve tissue in the body is in the plan of various organs situated at the surface of the body; nerve fibers running from these directly to the brain, or to smaller masses of cellular nerve matter at different points in the body; and other nerve fibers running from the brain or the smaller masses to muscles and to glandular organs. The nerves carrying

impulses inward are called *afferent* or sensory; those carrying impulses outward are called *efferent* or motor. The business of the outer sense organs is to receive impressions from material objects; of the muscles, to function in accordance with impulses carried to them; of the nerves, to transmit impressions to the central organs; and of the central organs, to receive these impulses, and to send out others, due to them or to mental acts, to the muscles controlling the motions of the body or to the nerve terminals controlling glandular secretions.

**Nerve Systems.**

In addition to this arrangement of the nerve masses, called the *cerebro-spinal system*, there is another, called the *sympathetic system*, whose business it is to regulate and direct the work of such organs as the lungs, heart, liver, etc., of whose normal action we are not conscious. Further description of the sympathetic system is not relevant here.

**The Cerebro-spinal System.**

The outer organs from which nerves run inward to the central nerve masses are called *organs of special sense*. The central masses are the *brain, spinal cord*, and *ganglia*. The organs of special sense are the *skin* and *muscles*, the *eye*, the *ear*, the *nose*, the *tongue*. Through the skin we receive the sensations of touch and temperature; through the muscles, the sensations of motion and resistance; through the eye, the sensation of sight; through the ear, sound; through the tongue, taste.

The essential portion of each special organ of sense, as just defined, is composed of nerve tissue; the other parts are appendages which aid in the reception of impressions. The eye has but a small quantity of nerve matter,—the retina; the skin is full of little nerve buds that are the real organs of touch; and so on.

The whole body, with its specialized end organs, is called the *sensorium*. The small masses of nerve matter in various parts of the body, to which and from which some of the nerves run, are called *ganglia* (singular, *ganglion*). The spinal cord is the marrow of the backbone, and connects with the brain at the base of the skull. The brain is the chief central organ, both in size and importance.

**Nervous System like a Telegraphic System.**

The cerebro-spinal system is sometimes compared to a telegraphic system, of which the brain is the great central office; the spinal cord and ganglia, less important central offices; the nerves, the connecting lines; the special sense organs, the points from which messages are sent in; and the muscles, the individuals to whom messages are sent. The similarity may be illustrated by tracing a sensation and its results. If you touch a hot stove, the little nerve buds in your finger are excited; the afferent nerves carry the news of the accident to the brain, which sends out along the efferent nerves a sharp command to the muscles of the arm to contract, and withdraw the finger.

Much of the work of the muscles is done on commands sent out from some lower center than the brain. The spinal cord directs much of our muscular action without troubling the brain about it. After we once learn how, we walk, form letters and figures, and perform most of our ordinary muscular functions, without giving them any direct voluntary thought. The brain leaves, so to speak, such routine, mechanical matters to the lower nerve centers.

Actions which are performed as the result of some impression upon the nerve center, when we do not give

conscious notice to the impression, or when the result is not under control of the will, are called ***reflex actions***. If the sole of the foot be tickled, the leg will be jerked away. If, when the legs are crossed in sitting down, the knee is tapped smartly, the foot flies up. If some object be brought suddenly near the eyes, the lids quickly shut without our willing them to do so.

**Reflex Action.**

The whole process of digestion is controlled and directed by reflex action. The food, as it passes through the different parts of the alimentary canal, furnishes the stimulus necessary to cause the nerve centers reflexly to affect the muscular coats and secretory organs of the digestive tract. Even the act of swallowing is reflex, and not voluntary beyond a certain point. If a morsel of food gets beyond this point, it is swallowed, whether we will it or not.

The explanation of reflex action, briefly, is that an impression is made upon the end of some afferent nerve, which carries the impulse in to some ganglion or to the spinal cord. This reflects it on to an efferent nerve, which carries it to the muscle, thus causing muscular contraction.

Reflex action may take place through the higher as well as through the lower nerve centers. Holding a plow in the furrow, rowing a boat, guiding a bicycle, are illustrations. After we become familiar with these activities, — after we have learned how, — we perform them involuntarily, and without consciously noting the impression in response to which the hands or legs turn this way or that.

**Reflex Action through Higher Centers.**

The higher forms of reflex action are the basis of

many *habits*, and it is one of the chief functions of the teacher to help his pupils form correct habits of all kinds. Let pupils be trained, through oft-repeated *reflex actions*, to hold the pen properly, to handle the pointer properly, to remove the hat on entering the schoolroom, to walk without shuffling, and to do many other things that add to the good order and comfort of the school. Even *moral* conduct becomes *reflex*.

**Reflex Action is Habit.**

There is a peculiar phenomenon, of much value to the teacher, connected with the fact that impressions made on the ends of the nerves at the surface of the body, in the skin or other sense organs, are carried inward to the central organs by the nerves, and that from the central organs impulses are sent out over other nerves. If the upper lip be firmly pressed just under the nose when the desire to sneeze is felt, the act of sneezing will be prevented. In some way not fully understood, the impulse sent from the lip checks the impulse coming to the muscles that are used in sneezing. This checking is called *inhibition*. A little experimentation would doubtless reveal many other such instances of inhibition in the lower forms of nervous and muscular activity.

**Inhibition.**

But the form of inhibition important to the teacher is that which is caused by the *will*. Examples of this are observable every day in the play of children and in the daily conduct of adults. To illustrate: If the sole of the foot is tickled, the tendency is for the leg to jerk away; but an effort of the *will* inhibits this impulse, and the leg does not move. If a boy gets hurt at play, the natural impulse is to cry; but the will inhibits the nerve impulses going out to

**Inhibition by Will.**

the muscles that are used in crying, and the lad restrains what he believes to be a weakness. A man gets angry with his neighbor, and the first impulse is to strike him; but the will inhibits the impulse starting outward to the muscles, and the hand is restrained.

Then the stronger the *will*, the greater will be the self-control. Through the inhibitive power of will, bad habits are corrected, evil tendencies rooted out, self-restraint is accomplished, and character formed.

At this point, if at no other, any materialistic theory of mind — anything that would identify mind with nerve tissue in action — must break down, for no materialist has explained the fact that a nerve stimulus can come from *within*, in the form of a *self-originating* act of will.

**Mind and Nerve Tissue.**

The impossibility of discovering what the connection is between mind and nerve tissue has been referred to; but that there is an intimate connection is shown by the commonest facts of our every-day experience. Anything that affects the nerve tissue, especially the gray tissue of the brain, more or less affects the mind.

Mental vigor depends upon nutrition as much as muscular vigor does. In fact, the brain receives a larger proportionate share of blood than any other organ of the body. Pain in any part of the body affects mental activity. Too much or too little blood supply in the brain; too much or too little sleep; narcotics, anæsthetics, and all substances that affect the nervous system through the stomach, — all register their effects in an increased or diminished activity and power of mind.

Mental action may be wholly suspended by reducing the supply of blood to the brain, through a pressure

upon the arteries of the neck, far short of that necessary to produce death. A clot of blood no larger than a wheat grain, or a minute splinter of bone from the skull, pressing upon the surface of the brain, is sufficient to change a man of culture into an ignoramus, or one of eminent character into a moral wreck. Every surgeon can give instances of a change in mental or moral character as the result of accidents to the head. Epilepsy and congenital idiocy may be cured in children by trepanning.

But although these facts show a most intimate and vital connection between mind and brain, other facts show that the mind is free, sometimes to an extent that is very surprising, from the physical weaknesses that affect the brain or other parts of the body. Some of the world's best literature has been written by men and women of frail physique, whose minds did high creative work in the midst of acute physical pain. Indeed, in some cases, it seems the frailer the body and the more acute the physical suffering, the clearer and more active the mind.

**Mind above Matter.**

Whatever of value there is in "mind cure" rests upon the fact that mind can rise superior to, and dominate, the body. The effect of the mental state in the cure of disease is recognized by every physician as being greater sometimes than that of all his medicines. The patient who is in a hopeful frame of mind and *wills* to get well, will recover far more rapidly than one who has lost courage or has grown indifferent.

**Mind Cure.**

The effects of the mental states upon the physical condition of well people are quite marked. Sorrow stimulates the tear glands, as does joy also sometimes;

strong emotion of any kind inhibits the physical desire for food; and all the organs of the body are subject more or less to inhibition or stimulation from purely mental states that in no sense have their origin in the nerve tissue. Dr. Rockwell has shown that jaundice may be brought on by a purely mental emotion. Anger is shown in the tension of the muscles and the clinching of the fists; excitement of any kind is outwardly manifested in the trembling hands, the shifting feet, or the drumming fingers. The mental disturbance is discharged along the motor nerves into the muscles. Such facts show that the mind affects the body quite as markedly as the body may affect the mind.

**Action of Mind upon Body.**

One other fact remains to be specifically noted in this connection. Mental action is accompanied by an increased temperature and wasting of the brain; that is, thinking, or feeling, or willing, uses up brain matter, and increases the heat of the brain, just as walking uses up muscle tissue, and increases the heat of the muscle. Intense anger, for instance, causes the nerve cells to explode so they can almost be felt discharging their nervous energy; and the phrase, *the heat of passion*, is physiologically exact.

**Brain Waste and Mental Action.**

The materialists would have us believe that *brain waste* produces mental action, that an emotion is simply a change in the quantity and arrangement of the molecules of brain matter. The bald statement of such a proposition is surely sufficient answer to it; but it may be worth while to reëmphasize the fact that the mind can *originate* nerve impulses without having first received any excitation through nerve matter.

By the phrase *brain localization* is meant the localiz-

ing of certain mental activities in certain portions of the brain. This has been done to some extent with some of the less purely intellectual activities. **Brain Localization.** Certain areas of the brain have been pretty conclusively shown to be the centers of motor activity; that is, from these areas of the brain substance those impulses start out which take effect in ordinary muscular movements. The area of language seems to be the only one of the areas of the more purely intellectual activities that has been definitely fixed. When this point in the brain — situated at the lowest frontal gyrus — is affected by disease, there is a loss of power to utter or write words, or to use them correctly. This loss of power is called *aphasia.* It manifests itself in various ways, and presents many peculiar phenomena.

While modern experimentation has shown that there was something, after all, in phrenology, it has so far failed to do more than establish the general **Brain and Intelligence.** conclusion that the front of the cerebrum is the seat of the thought power, and that intelligence is to some extent proportioned to the weight of the brain and the convolutions of its surface.

## Applications to Teaching.

There seems, perhaps, to the teacher-student of psychology very little in this that he can apply to his work as a teacher; and in a certain sense that is true in the present state of investigation. We shall doubtless have to wait some while yet before experimentation and observation in this field will supply a sufficient body of facts to enable us to establish any definite conclusions, helpful to the educator, beyond what we already have. The psycho-physic facts upon which emphasis is placed

just now, and which seem to promise something worth the teacher's while, are (1) that in different years of the child's life certain organs and perhaps certain brain areas become active, while others that have been active, or are yet to become so, are lying dormant; (2) that there is some relation between size and weight of body and mental power; and (3) that the sexes differ materially in the rate of bodily development. We may be justified in concluding from these facts that exercises should be planned to accord with the mode, rate, and time of physical variation. These points will receive further and fuller consideration in Chapter XXI.

Some other practical suggestions may possibly be drawn from what has been said in this chapter.

**Mental and Motor Currents.**

1. The teacher should remember that the *ingoing* stream of nervous energy is in the child a *mental* stream, carrying external facts and impressions to an awakening mind greedy to receive them; the *outgoing* stream is a *motor* stream, controlling the bodily energies of the child, which need intelligent direction, but not repression. In view of the first fact, childhood should be surrounded with every influence, both in objects of sense and in human conduct, that may quicken the mind to a right growth. The earliest impressions make the most ineffaceable records.

In connection with the second fact, it must be remembered that the mind of the child has not yet become accustomed or fitted to its bodily investment, and that therefore the growing child has but little *motor control.* In view of this, teachers of kindergarten or primary grades should be careful not to set any exercises except those requiring the simplest muscular adjustment.

2. Mental activity depends largely upon brain rest and

brain nutrition. The teacher cannot supervise nutrition, so far as food is concerned; but he can, through ventilation and exercise, provide for thoroughly oxygenated blood and a good circulation to carry it to the brain; and he can do something for brain rest by having frequent recesses, and requiring but little study at home on the part of young pupils.

**Brain Rest and Nutrition.**

3. The ability of the brain to do its work well as the organ of the mind depends very greatly upon the whole physical environment of the child, by which is meant not only those things that affect the body from its outside, but also the conditions of the body itself, — cramped position, cold, irritation, nervousness, general ill feeling; or their opposites, ease, warmth, quiet, comfort. All these things the teacher is mainly responsible for in the schoolroom.

**Mind Activity and Physical Condition.**

A very common error on the part of both teacher and parents, is to act as if children are not *nervous.* They *are*, irritably so. A rasping voice, nervous movements, or an irritable temper, in teacher or parent, all react strongly upon children, and produce like effects in them. On the other hand, so susceptible are children to all influences, that good temper, cheerfulness, good humor, even *good health*, are "catching," and that child is fortunate whose teacher has these qualities for the pupils to acquire.

# CHAPTER IV.

## MIND: CONSCIOUSNESS.

NO teacher can long observe the growth of the child mind, if indeed he will but observe it, without finding himself face to face with the question, "What is this that gains power from day to day, that seems to be *hungry to know*, and grows in strength from what it feeds upon; that thinks, and feels, and wills, and makes up the personality of the child?"

He knows, of course, it is *mind;* but what is mind? No reply is possible that does not raise more questions than it answers. But some consideration of this question is well worth the while of those who suppose there is no miracle in what is familiar.

**What is Mind?**

Every intelligent human being is aware that there is a something he calls "myself,"—a something that is not his limbs, nor body, nor brain, nor all of them taken as a whole; for he speaks of "my hand," "my body," "my brain." The *self*, then, the *ego*, is universally felt, even by those who do not think upon such subjects, to be a something apart from the physical being,—a something that bids the muscles contract, that sees and hears and tastes; a something that loves and fears, compares and decides. While this something is closely connected with and dependent upon the physical organization, it is not in any sense identical with it.

We can measure the length and diameter of a nerve

fiber, we can weigh a ganglion, we can chemically analyze the cellular matter of the brain, after it is dead; for these are matter. But none of these things can we do to the mind. To speak of a *cubical* emotion, a *linear* thought, an *acid* judgment, would seem the veriest nonsense, even to those who had never given a half hour in their lives to the study of mental phenomena.

**Analogy between Mind and Body.**

But there is a striking analogy between the mind and the body in many things. The body assimilates food, and grows. The mind's food is knowledge-material, percepts and concepts and relations. In proportion as it assimilates these, it grows. This is not merely figurative, it is actual. The man has *more mind* than the child. And just as unassimilated food clogs the digestive system, and retards the growth of bodily tissue, so facts merely crammed into memory, and not understood, — that is, perceived in their relations, — clog mental growth. The bodily organs develop and grow stronger by proper use. So the mind, like muscles, gets stronger through proper exercise. As an unused muscle becomes soft and weak, so memory, or judgment, or will, becomes ineffective through neglect, or misuse.

**Mind naturally Active.**

The normal body needs activity for its growth, and so delights in it. Every healthy animal — man or lower — loves to play, to use the muscles, to exercise the normal bodily functions. Man, when in health, also delights in *mental* activity. To think is to *live*, to know is to be *happy*. The right use of all the faculties of the mind gives the highest happiness. The normal intellect rejoices in activity. And as the best time to train and direct the bodily energies to the formation of habits that shall result in the one prime end

of ***health*** is during childhood and youth, so, too, the best time in which to establish mental habits that shall lead to permanent mental vigor is during the first two decades of life. And as the trained gymnast or athlete never loses his love for well-directed bodily exercise, so the trained mind always delights in thinking.

The point of greatest value to the educator is that the normal, healthy mind is not only active, but it is active in a *right direction.* Then the business of the teacher is to supply the best possible environment for normal growth, and to let the mind grow.

As the body grows weary from prolonged exercise, and needs frequent cessation from activity, — needs rest and sleep, — so the mind grows weary from continued activity, and must have rest before it can resume its wonted tasks. And it must be noted that the mind can grow weary independently of the body, that is, when the body has not been active. Weariness of body affects the mind; and when the mind grows tired from intense thought, the muscles sometimes feel strained and sore, as if they had been guiding a plow or turning out spadefuls of earth all day.

**Mind and Body Independent.**

But mind and body grow weary independently. The body may grow tired from its continued expenditure of energy, while the mind is inactive; and the mind, after prolonged effort, demands rest before it will do more, though the body may have been quiet for hours. Such facts, of daily occurrence in the experience of every one, serve to illustrate further that mind and body, though closely related, are two distinct things.

One other peculiar similarity between mind and body is found in the fact that mind seems to have both

*inertia* and *momentum*. A railway train standing still is inert. Force is required to get it in motion. The property of inertia inherent in all matter makes it harder to start the train than to keep it going. The train in motion has what is called *momentum*,—accumulated motion that carries it on, even when the steam is cut off or the lever reversed. The mind is sometimes very similar to the train, in that, owing to bodily weakness or disease, or an inertness of its own, it has to be driven to its work; and often, when fully occupied upon some line of thought, it is equally hard to check its activity, or to turn it to some other subject. Every one has experienced this difficulty.

**Mind has Inertia and Momentum.**

But while these analogies are peculiar and of great interest, still they afford no explanation of what mind *is*. It may be stated at once that it is not possible to know what anything *is* in its essence,—what snow is, what iron is, what air is. We know things only through their *attributes*. We define snow by its *attributes* of whiteness, crystalline structure, etc.; and thus with everything. We can define mind only in the same way, by naming its attributes, or those manifestations that distinguish it from other things. Such a definition is the one usually given: *Mind is that which thinks, feels, and wills.* It may be possible to get nearer to the truth with this definition: *Mind is that force which manifests itself, through organization of nerve substance, in knowing, feeling, willing.* No graver objections can be offered against this than against other definitions of mind; and it seems to suggest explanations of some phenomena that no other definition does.

**Mind defined.**

Force is the one thing that produces motion, and may be so defined. Mind produces motion in brain tissue, nerve fibers, and the muscles: hence mind must be a force, or, at any rate, force must be an *attribute* of mind. If this line of thought be true, it presents a scientific basis for deducing immortality. Force, like matter, can never be annihilated; such, at least, is one of the conclusions to be drawn from the modern theory of the conservation of energy. If the mind be a form of energy, then, it cannot suffer destruction.

**Mind a Force.**

**Mind Immortal.**

Alongside of the definition of mind just given, these others following are placed, some by way of comparison, some by way of contrast:—

**Other Definitions.**

"By mind we mean anything and everything that is comprehended under the little word 'I'."—*Krohn.*

"The self of which we assert mental phenomena is called mind."—*Baldwin.*

(This is an illogical definition, since it uses words that are synonymous with or derived from the word to be defined.)

"Mind is a one self-conscious entity."—*Laurie.*

"The subject of all the states of consciousness is a real unit-being called mind, which is of non-material nature, and acts and develops according to laws of its own."—*Ladd.*

"Force is an attribute of mind, but it *is not mind.* Mind, as we know it, is *embodied* spirit."—*Munsell.*

(What is spirit?)

"Mind, like force, is essentially active."—*Carpenter.*

The most striking central fact of mind is *consciousness.*[1] By some writers *consciousness* is used almost as

[1] *Consciousness* should not be confounded with *conscience.*

a synonym for *mind;* by others, as the normal condition of the mind when awake; by others, as the great basic power or faculty by which the mind is aware of itself and its own acts, and by which the sense of personal identity is preserved. These different uses are not conflictive, but should be clearly discriminated as the *state* or *condition* of being conscious, and the *faculty* of *self-consciousness.*

**Consciousness: Kinds.**

As a state, consciousness may be defined as *that condition in which the normal, waking mind does its work.* We speak of one who has fainted, or is asleep, or who has been stunned by a blow, as *unconscious. Self-consciousness* may be defined as *the basic faculty or fundamental power of the mind by which it is aware of its conditions and acts as being its own, and by which it knows that it is the same mind all the time.* Hopkins gives it essentially the same but a somewhat briefer definition: "Consciousness is the knowledge by the mind of itself as the permanent and indivisible subject of its own operations." I have not been able to discover any definition of consciousness that is clearer or in any way better than this. Let the teacher study it carefully, and in the light of his own inner self.

**Personal Identity.**

Self-consciousness, it will be seen, gives us the sense of *personal identity*, the certainty that I am the same being I was when I went to sleep last night, or when I started to school years ago. My feelings, my thoughts, may have changed even over night, and have greatly changed since childhood. I look at things now as a man, not as a child of six, but I know that I am the same *I* that I was last night or that I was at six years of age.

The most essential peculiarity of consciousness is its

*unity* and *continuity*, which binds all the complex experiences of sense and thought into one extended and ever-extending series.

We could not possibly have an idea of the sameness of material things, or of their changes in form or place, were it not for the sense of the sameness of *ourselves*. How do I know this desk is the same at which I wrote yesterday? I can know only through the knowledge that *I* am the same as he who wrote upon it yesterday. This self-consciousness is the basis of individuality, of personal character, of independence of being; and even in the child it should be sacredly respected by the teacher.

**Sense of Identity.**

*Consciousness* is another fact which the materialist must, to be consistent, either flatly deny or silently ignore. While it is true that changes in the blood supply of the brain, or in the substance of that organ, directly affect consciousness, yet by no stretch of even the scientific imagination can consciousness be consistently conceived of as identical with any arrangement or organization of *matter*, or as a property of matter. The matter of the brain, as a part of the body, changes completely in a relatively short time, is not the same to-day that it was yesterday; but *normal consciousness is the same all the time, — a fixed awareness of self-identity.*

Consciousness may well be compared to the circle of clear white light thrown on the screen by a stereopticon. In this circle must appear all the pictures before they can be seen and enjoyed. The senses and memory may be compared to an attendant who places the slides. Like other attendants, they sometimes place the slides poorly, so that the pictures fall partly in the dim ring of light that

**Consciousness compared to Light.**

lies outside the clear spot, and we are not able fully to recognize them. Though this is wholly figurative, it is none the less true that into consciousness must come every percept of the external world, every concept, every act of judgment, or imagination, or will, before these can be of any value to us. We can *know* nothing, *feel* nothing, *will* nothing, outside of consciousness. It seems to me that upon consciousness should be placed our *moral responsibility* as well as upon the *will*, and that it is nearer the truth to speak of a *free consciousness* than of a *free will*. We are not in any sense responsible for acts that are committed *unconsciously*, in a state of delirium, somnambulism, or hypnotism. Will is responsible only as we are conscious of its action.

There is an aggravated or perverted form of the sense of self, commonly called *self-consciousness*, which may

**Morbid Consciousness.**

manifest itself either in a morbid sensitiveness (shyness, bashfulness, timidity) or in an exaggerated self-conceit. Both are common in children and young people, and are indeed quite frequently found associated together. A very familiar illustration is found in the feeling of young people that they are the cynosure of all critical eyes when on the street, in a railway car, or in any congregation of their fellows.

It should be the effort of every teacher to relieve and tone down these feelings of timidity and of self-conceit in his pupils, but not to eliminate them. Morbid self-sensitiveness may be made to ripen into modesty, correct deportment, and a watchful imitation of the polite usages of society. Abounding self-conceit may be toned into a sound self-confidence, a faith in one's self that marks the leader of men and the doer of things.

One other form of self-sensitiveness remains to be

noted, which those people suffer from, who have carried morbid self-inspection to an extreme, examining their motives, analyzing their feelings, wondering about their morals or religion, etc. Children of either sex, of nervous temperament, are subject to this kind of torture, for it is torture. When the teacher has the insight to discover this condition in any child, he should be very tolerant and sympathetic. It is a kind of disease.

**Another Form of Self-sensitiveness.**

The degree of intensity of normal self-consciousness varies greatly in different individuals. Many people seem to have but a limited power of referring their acts to themselves in any responsible way. By both word and deed they seem to confess that they act more from impulse and whim than from conscious purpose. Such people are called impulsive, eccentric, harum-scarum, or cranky, according to their station in life. They have an air of irresponsibility about them that unfits them for positions where *purposive* work, of even a low order, is to be done. The world has need of people who *let their consciousness permeate their work.* The idea is fully expressed by the homely phrase, so often addressed to children, "Think what you are doing." The saying of the new education, that "we learn to do by doing," is true in its best sense only when the doing is consciously directed.

**Consciousness and Responsibility.**

A study of the phenomena of *unconsciousness*, or rather *other* consciousness (such as trance, cataleptic sleep, hypnotism), and of the phenomena of *double* consciousness (in which a person changes from one personality to another without being aware of the change), is of intense interest to any student of mind. but is of practical value mainly to

**Phenomena of Consciousness.**

those whose business it is to have the care and healing of mental diseases.

Dr. Maudsley says, "There is not an inconsistency or contradiction of which human nature is not capable; not a folly of belief or an absurdity of practice which has not been cherished by some people or other at some period or other of human history." There is no trick too fantastic for consciousness to play.

**Mental Activities classified.**

As it is the business of the observer of nature to classify what he sees, and to bring all observed phenomena into a few groups, so it is the business of the student of mind to classify its manifestations, and put those of similar kinds into the same class. Any one, however unskilled in this sort of investigation, can, upon a slight examination of the workings of his own mind, readily discover three classes of activities. He thinks and knows and imagines; he feels love and fear and shame and joy; and he wills to do this or that thing. The powers of the mind by which these various acts are performed are conveniently classified under the *intellect*, *sensibilities* or *feelings*, and the *will*. This classification receives the sanction and approval of a long line of investigators, and any attempt to change it must inevitably result in the coining of new terms that are much less apt and expressive. Even the materialistic psychologists, who are averse to any classification that introduces the term *faculties*, may fall into the use of it when a little off their guard.

But any classification of mental phenomena that stops with an enumeration of the *faculties* of the mind is incomplete, since it omits any proper grouping and description of the *operations* and processes that these

faculties are constantly engaged in during our normal waking hours. These operations and processes will be described and analyzed later; and it is only necessary to refer to them here as *acquisition*, or the collecting of the material for mental growth; *assimilation*, or the elaboration of this material,—the organization of it into one's own body of knowledge and character; and *reproduction*, or the putting-forth of the elaborated thought so that it may affect other minds.

**Operations of the Mind.**

## Applications to Teaching.

The deductions of value to the teacher that may be drawn from this chapter can be summarized as follows:—

1. The mind, as has been seen, needs nourishment, use, and rest, in order to its sound growth. The teacher, then, should see to it that such exercises be given to the child as will nourish the mind at the different stages of its development. It is imperative that the lessons be adapted to the power of the child to assimilate; that is, to understand. Stuffing the child's memory with facts he cannot understand is worse than stuffing his stomach with food he cannot digest.

2. It is the natural tendency of every faculty of the mind, as it is of every organ of the body, to do the work for which it is fitted in such way as to give pleasure. *Pleasure in doing* is a law of both mind and body; and *growth from use* is a law of equal validity. If the child does not like to learn,—to learn *something*, for all children do not like to learn the same things,—the teacher should carefully examine his methods of teaching to discover why, before he accuses the child of a perverse desire for ignorance. Also from this law of

use the teacher should learn the lesson that it is what the child does for himself that makes for his growth. The teacher might as well eat the child's food for him as to do his thinking for him.

3. The teacher should put into effect the law of rest by providing short lessons and other mental exercises, and frequent intermissions for relaxation and play. It is wrong, both physiologically and pedagogically, to try to teach a tired child.

4. As the digestive processes are stimulated by the proper cooking and seasoning of the food, so the processes of mental assimilation may be stimulated by the proper preparation and presentation of thought material by the teacher. There is a way to teach so that every lesson and every exercise shall be flavored with interest, and the teacher who finds out this way is the one whose pupils through all their lives will call him blessed.

5. The teacher must constantly strive to secure the conscious, self-directed effort of the pupil; for work that is consciously done with a purposive effort is the only kind that is worth anything. The best way to secure this kind of work is sympathetically to let the child understand the *end* for which he is working, and that the teacher is working with him to that end. This end toward which the effort is to be directed must be set before the child or youth in such form as will make it attractive in itself, and will arouse a compelling interest. The teacher should often show the relation of each study or of each lesson to practical everyday affairs, and the relations of different studies to one another. This will prevent the formal, routine work that is done so often while the higher consciousness of the pupil is busy with other things.

## Consciousness below Man.

Modern psychological methods have opened up anew the interesting inquiry whether the lower animals have mind. No intelligent observer of the acts and habits of animals can doubt that they afford all the *indications* of mind that man exhibits. They can attend, and form habits; can feel fear, joy, shame; can reason in some degree; and can will. It remains to be determined whether animals have a sense of guilt following upon wrong doing, and a sense of pleasure after right doing; and whether they have real *self-consciousness*. Those who are interested in mind as mind can gain much from a study of its manifestations in the lower animals.

**Animal Mind.**

It is even claimed by some that a lower form of consciousness, not rising into self-consciousness, marks the lowest life forms. If that be true, then there is a dim consciousness in the oyster, in plants, in the monad. When it comes to proof of such possibilities, there is more to be found in favor than against. There could be no grander demonstration on the part of science than to show that there is a *universal* consciousness working everywhere, animating and transforming lower life forms into higher, manifesting itself as the divine purpose.

**Universal Consciousness.**

# CHAPTER V.

## CONDITIONS OF MENTAL ACTIVITY.

### CONSCIOUSNESS.

THERE are certain *physical* conditions of the mind's activity — brain nutrition, brain rest, etc. — which have already been touched upon. It is now proposed to discuss the three fundamental psychical conditions of the mind's best activity. Consciousness, attention, and habit occupy this chapter together, although they have nothing in common except the fact of being the psychical conditions in which the mind does its most effective work. To accomplish a given task in the shortest time, with the least waste of energy, and with the best results, the mind must be *conscious*, *attentive*, and *habituated* to the kind of activity demanded by the work to be done. It is not forgotten that we may do many things semiconsciously, or even unconsciously; and that we may do many things well which we have not done before, and so could not be in the habit of doing; but it is none the less true that we must do a thing many times *consciously* and *attentively*, before we can do that or similar things *unconsciously* and *automatically*.

The general statements just made find ample, specific illustration in many familiar facts. The bicyclist had to be intensely conscious of what he was doing, and to give it exclusive attention, for a longer or

shorter time, before he could ride as automatically as he walks. A skilled mechanic will learn the use of a new tool much more quickly than a teacher, because the mechanic is habituated to handling tools, while the teacher is not.

It is worth noting, however, that intense *self*-consciousness is not favorable to the best activity. If the child is too conscious of the way in which he forms each letter, after he has once learned to write, his work will be neither so rapid nor so good as if he is simply conscious that he is writing, and wants to write well.

## ATTENTION.

***Attention is that condition of the mind in which the energy of one or more faculties is directed upon an object of sense or of thought.*** The word is also used to name the *act* of attending. Attention is often miscalled a *faculty;* but it is plain that it is not, since attention does nothing, but is only a quickened or energized state of one or more faculties.

There are three kinds of attention, — ***voluntary, involuntary***, and ***expectant***, — and each is worth the teacher's careful study. **Kinds of Attention.**

***Voluntary*** attention is that kind in which the ***will*** directs the faculties upon some thing to be considered.

The word ***attention*** means literally a ***stretching-to.*** The will stretches the mind forth to the thing to be seen, or done, or thought upon. In this phase of attention, the ***will*** is the faculty which brings about the condition. The will may not only arouse the faculties from an indifferent or idle condition, and direct them upon some object, but it may draw them off from the consideration of one thing to put them at work upon an-

other. We may cease attending to a recitation in order to discipline the room; we may withdraw our observation from a beautiful sunset, and attend to the lesson to be studied.

*Involuntary* attention is that kind in which the mind is drawn by *interest* to the consideration of something. We involuntarily attend to anything which excites our interest or curiosity. An unusual sight or noise is sure to be attended to. Whatever is curious, new, or in any way attractive, is certain to be an object of attention. Indeed, the word *attractive* is, in its literal meaning, the correlative of *attention*, for it means to *draw to*. An attractive thing *draws* the mind to a consideration of it. This fact is of the highest value to the teacher. Everything about the school yard, the house, the room, the recitation, — every exercise, in fact, should be made as attractive as possible.

**Children's Attention Involuntary.**

Children, and, for the matter of that, many adults, cannot give voluntary attention for any considerable length of time. The power to hold the mind steadily to a line of work is characteristic only of the most highly trained and disciplined intelligences, and has by some been said to be genius. The reader may look into his own experience, or try the experiment of keeping his mind closely for even a half hour to the consideration of something not especially interesting, and he will readily see how difficult it is to compel his attention to uninteresting things. It is worse than useless to expect children to attend to what lacks interest for them, or fails to arouse their curiosity. In this fact is found the truest reason for *object teaching*. It may be stated thus there can be no effective teaching without the *attention*

**Object Teaching.**

of the pupils; the child cannot attend unless *interested;* and he will not be interested in *abstractions*, but in *things* that he can see and handle. Stated more concisely, the argument is this: no good teaching without *attention;* no attention without *interest;* no interest without *objects*. And the argument holds good for all grades of students, from the kindergarten to the university. The university of to-day has "object lessons" in almost every department of study, as witness the splendidly equipped laboratories, museums, maps, pictures, etc., that are in daily use. No teacher of a country school should for a moment think that he can teach well without illustrative material, any more than the professor of chemistry can without a laboratory. It is only necessary to remember that the apparatus must be adapted to the pupil's ability and advancement, and to the subject of instruction.

**All Attention due to Interest.**

It is questionable, indeed, whether any one, adult or child, trained or untrained, can attend unless interest is the mainspring of the effort. We set ourselves often to the accomplishment of disagreeable tasks, to the doing of things we are not interested in, but not unless by doing these things we can attain some desired end, or can eventually gain some object of interest. The student plods through many a dull and tasteless task because by doing so he may secure some coveted knowledge or increased power of thought. No amount of will can make a successful merchant out of a man who is not interested in buying and selling, who is not attracted by the methods of business; nor can a man who is interested only in prices and the state of the market attain success in a liberal profession. Interest

**Interest the Basis of Success.**

must produce attention, and upon attention depends success in any work.

Teaching is almost wholly lost upon inattentive classes. Arouse, stimulate, attract the attention of pupils, and teaching is easy. Do not try to *compel* attention: the kind of attention pupils give through compulsion is of but little value, except as it holds them to a task long enough for the teacher to convince them of its attractiveness and worth.

There can be no doubt that the mind can attend to more than one object at a time. To sing and play an

**Divided Attention.**

accompaniment, to use a complicated machine, to teach a class and observe the order of the room, — all these, and thousands of other things we do every day, necessitate keeping the mind busy with several things at once. It is said that Cæsar could dictate seven letters at once. It has been asserted that expert stenographers can with one hand take down a speech in shorthand, and with the other write out the stenographic copy into longhand.

But it is also true that the *intensity* of attention diminishes with the number and variety of objects attended to. To bring about the most effective concentration of thought, the field of mental vision must be narrowed as much as possible, and the objects considered must be related.

The teacher should require but few things to be done or studied together, and those things should have an evident and simple relationship. A subject should be presented to a class *connectedly*, so that attention may not be diffused and weakened.

The power to attend can be readily cultivated by persistent practice. It vivifies consciousness, intensi-

fies impressions, fixes objects in memory, and makes all mental and physical work effective. Anything that strengthens *will* gives increased power to attend, to hold the mind at work upon a task with its faculties focused. The power of attention is easily weakened by overmuch reading of newspapers, light literature, and flashy fiction.

**Cultivation of the Power to attend.**

Teachers will find the subjoined suggestions of some value in securing and holding the attention of classes.

1. Every new subject should, when possible, be introduced *objectively*. Let there be something to *see*, or *hear*, or *feel*,— something besides mere *words*.

2. Be careful to have the pupil's eyes upon your face or upon the objects you are using.

3. Do not try to present many new ideas in any given exercise. "The *intensity* of attention is inversely as its *extensity*." Don't "scatter."

4. Speak in a *low tone*, clearly, and distinctly, and let the pupils understand that you will rarely *repeat* questions or statements.

5. Ask the question first; then call the name of the pupil who is to answer.

6. Ask your questions *promptly*, and require prompt answers.

7. Study ways of presenting subjects and of asking questions so as to arouse the *curiosity* of the pupils.

8. Surprise the inattentive pupil by an unexpected question.

9. *Abolish routine questioning*,— round the class from head to foot. Let every pupil understand that he is liable to be called on at any time to answer any question, or to criticise or supplement the answer of another pupil.

10. Carefully *vary* your methods of conducting a recitation.

11. Attention uses up brain cells rapidly. Let all exercises be *brief*.

12. Above all, *be interested yourself*, and show that you are.

It is scarcely necessary to say that no teacher can successfully apply these suggestions if the text-book is used in "hearing a lesson." Put the text-book aside, and make your own questions.

**Expectant Attention.**

There is another kind of attention known as *expectant attention*, which may be defined as *that condition in which the mind dwells upon something that is expected, and that is dreaded or desired.* Carpenter, who gives this phase of attention a thorough and most interesting discussion, defines it as a condition in which the "whole mind is possessed with the idea that a certain action will take place, and is eagerly directed towards the indications of its occurrence."

**Expectant Attention and Disease.**

By fixing the attention with a dreading expectancy upon bodily symptoms, they may be greatly exaggerated, and disease may even be induced in a part where none existed before. Such is the intimate and peculiar connection of mental states with physical states, that any part of the body — the foot, the head, a tooth, the stomach — will respond to a fixed expectancy that pain will be felt in that organ.

Numerous well-authenticated cases are on record in which serious changes in the tissue, or in the blood supply, or in the working of an organ, have been brought about by expectant attention. Advertisers of patent medicines take advantage of these facts, and by describing the symptoms of disease easily succeed in getting

nervous people, who think overmuch of their physical condition, to imagine that they have many of the ills that flesh is heir to. Reputable physicians rely greatly upon hopeful expectant attention to aid their medicine in the rapid and effective cure of patients. Expectant attention, according as it is hopeful or the reverse, is a potent factor for good or ill in the treatment of all nervous diseases. Even serious organic or constitutional disease has been absolutely cured solely through the positive conviction in the mind of the sufferer that he would get well as the result of something done for him. Such cures of scrofula by the "King's touch" in England are too well attested to be doubted; and the efficacy of "bread pills" is well known.

**Expectant Attention and Superstition.**

Every one who has lived in the Southern States, and has used his opportunities to gain information upon the subject, is aware of the not infrequent illness or death of negroes simply from the conviction that they had been "conjured." Many a boy will attest the fact—for it *is* a fact—that warts have been taken off his hands by his cutting as many notches in a persimmon tree as he had warts. As the notches heal, the warts disappear. There is a host of neighborhood superstitions whose foundation is in expectant attention. Such are the beliefs in the various signs of luck and ill luck, in the many devices for "reading the future," and in the efficacy of hazel forks and divining rods in locating streams of water or mineral veins beneath the surface of the ground. Hardly any neighborhood is without its "water witch," who, on occasion, gravely takes a hazel fork, grasping the end of one prong in each hand, and walks solemnly back and forth over a given

area to determine, by the "dipping" of the fork, where a well may be sunk, and even how deep it will need to be!

The explanation of this sort of "witchery" is simple. No matter how thoroughly honest the man may be, he has some notion, from the "lay of the land," where water may be found by digging. Having faith in his hazel fork, as he has, he *expects* it to turn at the point where he thinks water may be found, and this *expectancy* is all that is needed to start the muscular impulse that will throw the "teetering" fork over, in spite of his honest attempts to hold it. In firmly grasping the small, limber ends of a forked twig, the spasmodic contractions of the strained muscles soon draw his hands ever so slightly apart or together, and thus throw the point of the top-heavy fork downward. If "water witches" could work as well blindfolded as with their eyes open, sceptics might have more faith in their performances.

Enough has been said to show that many, if not all, of the phenomena of "table tilting," "planchette writing," etc., may be explained in the same way. It is a well-known fact that "sceptics"—that is, those who do not have the requisite *expectancy*—fail to get results from table or planchette. Many a "humorist" receives the reward of laughter because he is *advertised as humorous;* and people come to hear him, expecting to laugh.

**Expectant Attention in the School.**

Some knowledge of the many and peculiar results of expectant attention opens for the teacher a wide field of inestimable usefulness. Children are specially liable to the evil or good effects of an expectant mental state. If the teacher can only arouse the expectancy of the pupils as a body that

the school will be the best, that good order will prevail, that the truth will be told on playground and in class, and of each individual pupil that his work will be pleasant and his real difficulties few. that teacher will have prime results from the start.

No description of a peculiar disease or its symptoms, no account of unusual crimes or accidents, should be told or read in the hearing of children. Dr. Van Norden says, "It should be a fixed habit to divert attention from personal pain, from the foul, morbid, and horrible, and to keep the mind sweet and clean, hopeful and aspiring, stored only with facts and fancies of the true, the beautiful, and the good." And since every teacher should be, so far as in him lies, a *revealer of truth* not only to his pupils, but to the community in which he works, he should discreetly use every opportunity to point out and prove the absurdity of popular superstitions, based on expectant attention mixed with ready credulity and untrained observation.

## HABIT.

*Habit is that condition of the mind or body which is manifested in the tendency to unconscious repetition of acts or states.* For example, we say of one that he has a habit of eating too rapidly; of another, he has a habit of telling the truth. Acts or states that are now habitual may once have been partly or wholly under control of the will. It is possible, for instance, that the action of the heart, now wholly automatic in man and the higher animals, may have been, in preceding life forms, consciously directed. Such automatic actions may be called *organic* or *life habits*. What are called the *instincts* of animals are

**Instinct.**

*race habits,*—habits acquired through the lifetime of a species, or perhaps an order, instead of during the life of the individual. Man, too, has his instincts as well as his individual habits. The characteristic actions of animals are probably for the most part due to instinct; but there can be no doubt that some of their actions are *rational*. This distinction may be drawn between instinct and reason: *instinct* enables its possessor to adapt himself to conditions that arose in the history of the *race; reason* enables its possessor to adapt himself to conditions that arise in the experience of the *individual*. If this is a true distinction, then many animals have the rational faculty.

**Difference between Instinct and Reason.**

Habit is the result of *repetition*. Doing a thing a certain way once makes it easier to do it that way a second time, and each repetition makes the thing easier to do. If a nerve carries a certain kind of impression inward once, it is easier for that kind of impression to travel along that nerve again than to follow a new nerve path. Also, if a thought impulse moves outward along certain nerves, and is expressed in the action of certain muscles, these nerves will more readily carry, and the same muscles will more easily express, the same kind of thought impulse a second time, than will other nerves and muscles.

**Habit formed by Repetition.**

This is an illustration of what is called the *law of least resistance*. Any body or any force moves in the path that offers the least obstruction to its passage. The formation of *lines of habit* in the nerves and muscles, brain and mind, bears a very real resemblance to the work of rivers in forming their channels. Let alone, the water will find and use the line of least re-

sistance; curbed and directed, it can be forced to make channels where it would not naturally run. Thought impulses, left to themselves, will form paths in brain and nerve, and become habitual in expression by certain outward acts. Controlled and directed by the will, these thought impulses may be made to originate nerve tracks, or to change those already formed, and to find outward expression in better forms of doing.

**Classes of Habits.**

Habits are *physical*, *intellectual*, and *moral*. Further illustration of the formation of habit will be given in the discussion of each of these kinds.

Walking is a physical habit. The child's first attempts to walk require his closest attention, the most intense consciousness, and the strongest application of his will. When the various will impulses have found the nerve paths that lead most readily to the muscles of the lower limbs, and the muscular actions have become correlated, then walking ceases to make demands upon consciousness, and becomes an unconscious, automatic process, wholly directed, under all ordinary conditions, by the reflex nerve centers. How conscious volitional action passes over into unconscious automatic action, is illustrated in learning to swim, to ride a bicycle, to perform any feat of athletic skill.

**Muscular Movement.**

Children have to learn all those muscular movements which in the adult seem automatic. The infant can make no coördinated movements, except possibly a few that are the result of race habit, or instinct. The child must *learn* to hold objects, to pick them up, to carry his hand to his mouth, to turn his eyes or his head, to crawl, to stand, to walk, to talk. The nerve tracks along which travel the impulses that produce these acts are all formed in the nerve wilder-

ness by the constant effort of the child between birth and two years of age. Of course, the lines which these motor paths must follow have been determined by no one dares say how many centuries of development; but each child of the race must learn anew how to drive the impulses along these established lines, and make the road smooth from *will* to *muscle*. The motor nerves run from brain to arm or leg, in the infant as directly as in the man; but they are like roads that have been carefully surveyed and marked out, but that are not yet opened for travel. It takes a deal of labor to open them; and any one who takes the pains to watch the effort of a child three months old to carry his rubber ring to his mouth, even after it has been put into his hand, will appreciate the comparison.

**Intellectual Habits.**

Observing closely, thinking clearly and quickly, remembering accurately and readily, are examples of good *intellectual* habits. To these should be added the habit of accurate statement. (Inaccurate statement is not necessarily lying. The *motive* that underlies inaccuracy of statement determines whether it is lying or intellectual slouchiness.) Intellectual habits, like physical ones, are the results of frequent repetition.

The habits just named, in the broadest application, mark only the most generously endowed and carefully trained minds. *A habit of close observation* is a misleading phrase, unless somewhat narrowly modified. A man may be a close observer of geological phenomena and at the same time almost blind to the most interesting peculiarities of plants and animals. The scientist (of a sort) may keenly observe the facts of biology, and not even *see* the blending colors of sky and rock and wood and field; while the artist would observe the

shifting color scenes, and have no eye for the inner structural differences of plants and animals. All this is equally true of habits of remembering, thinking, willing. A student may form a habit of thinking clearly and quickly in arithmetic, while he can think in grammar or remember in geography only with difficulty. It is granted that much of these differences of ability is due to natural aptitude or inaptitude, but even more is due to habit. The *morality* of a habit is to be sought in the motives that originated it or cause its continuance. Constant, careless disregard of known *natural* laws, resulting in disease, is morally wrong; while ignorant transgression of these laws is not, so long as the transgressor is not responsible for his ignorance. The same may be said, within certain limits, of the transgression of *moral* law. The habit of inaccuracy is a wretched one, but it is not *immoral* except when it is formed or kept up from a desire to deceive others. In such a case an inaccurate statement is a lie.

**Moral Habits.**

Moral habits may all be summed up under three heads, —*hygienic observance*, *veracity* and *honesty*. Each of these is to be understood in its broadest sense. To use tobacco, knowing its effects, is hygienically immoral; to be inaccurate about anything, with evil intent, is to lie; to take, legally or illegally, any kind of property of others, is theft; to be of unchaste habits is to violate the laws of hygiene, truth, and honesty. Telling truth once or lying once does not form a habit; but each time either is done, the corresponding habit becomes more firmly fixed.

Dr. Maudsley sums up the value of habit when he says, "We are the useful machines we are in the work of life, only because the great majority of our ordinary

acts and judgments have been rendered automatic and unconscious. Virtue itself is not safely lodged until it has become a habit." Powell, in his "Heredity from God," declares, "Take it all in all, ninety-nine hundredths of all a man does he does automatically." That leaves his brain time and strength to attend to other affairs. "Only at the aggressive edge of purpose, where effort seizes upon the new, are we conscious:" all else is, or ought to be, automatic. Ward says, "The process of ideation [conscious thinking] is physiologically very expensive." It uses up brain substance. No man could be a great thinker if he had to give conscious attention to *walking;* there would be no literature if writing were not *automatic;* there could be no *skill* of any kind were it not for habit. The watchmaker's fingers must work of themselves; the surgeon's muscles must know how far to contract; the singer's vocal cords must fix their own tension; the orator's words must come without search, and leave his brain free to *think*. The more work consciousness can hand over to habit, the greater the opportunity to rise into new and higher modes of thought and activity. The more we can do *automatically* through the lower nerve centers, the more power we have left to use in the struggle up to higher levels of thinking, feeling, and willing.

**Value of Habit.**

All this is true only when the habits formed are right habits, for the capacity to form habits is as dangerous as it is valuable. Wrong habits tend to degeneracy, waste of power and opportunity, and obliteration of conscience. Even when habits are not evil, they may do harm by so fixing and "solidifying" the modes of thought and action as to fetter the mind, and make progress slow or impossible. It is hard

**Danger of Habit.**

work to pull one's self out of the worn grooves of habit and learn to think and do new things, or adapt one's self to new customs. This fact explains much of the difficulty and ineffectiveness of reform work among the ignorant and low. Any real reform of such people must be based on changed habits of eating, drinking, sleeping, caring for the person, etc.; and it is hard to get such people to make any change in these things.

No one is free from the danger of intellectual and moral inertia, and no one can afford to let the purposive edge of consciousness grow dull.

## APPLICATIONS TO TEACHING.

**Early Habits.**

Back of the school stands the greatest factor in forming habits, — the home. The things a child learns to do first, the way he learns of doing them; the words he learns to speak first, and the ways in which he learns to speak them; the intellectual and moral surroundings of his first six years, — these tend to become fixed in his consciousness; and to remove them is often more than the most helpful teacher can do, after the child comes under his care. The unseen, unfelt nerve paths for impressions and impulses seem harder to change than the courses of rivers. Hundreds of cultured men and women whose early surroundings were not helpful in the formation of correct habits are forced to be constantly on guard against lapses of pronunciation or syntax, or some of the many conventions of polite society. No matter how thoroughly one may think he has put early provincialisms out of his vocabulary, he will almost certainly revert to their use when he is excited, and consciousness is off guard. These are illustrations, merely, of an important and

deep-lying fact, whose value to the teacher is evident. In the school the child must form as many right habits as possible, and reform such as may stand in the way of his progress.

But the teacher can do much, and should spare no wise effort to drill his pupils into habits of *cleanliness, neatness, orderliness, punctuality, courtesy, quickness, accuracy, obedience*, and *veracity*. It is better to send forth a pupil with these, and without much knowledge of arithmetic or formal grammar, than to fill him with knowledge and have him lacking in *right tendencies*.

**Habits in School.**

*Cleanliness* is next to godliness, and probably stands first, for surely no unclean face can reflect the image of God. Soap and water are powerful missionaries. *Neatness* is simply an extension of cleanliness from the skin outward, to the clothes, the desk, the bedroom, the kitchen, the workshop. Pupils should be required to come into the schoolroom with clean shoes, with their clothes properly fastened, with their hair brushed; and they should be held responsible, while in the room, for the condition of the floor and of their desks, for the appearance of the blackboard and the papers upon which any kind of written work is done. Neatness and orderliness are among the chief elements in correct deportment.

*Orderliness* is closely akin to neatness, and the one cannot be cultivated without the other. No pupil should be permitted to sit, stand, or walk, slouchily and lazily. The teacher must unceasingly (but not naggingly) insist upon the erect position in sitting or standing, and must allow no shuffling in walking. Carried into the work of the school, orderliness means that the books and papers on the desks shall be kept in proper arrange-

ment; that all written work — solutions, diagrams, maps, essays, etc. — shall be done according to some definite, standard form. The excellent drill which it gives in orderliness is sufficient to justify manual training, if it had no other advantages. There is much untidy and disorderly work going on everywhere; and that kind of work means *waste*, — waste of time, of effort, and of material. In the child should be formed habits of order, that the man or the woman may plan clearly and execute rapidly.

*Punctuality* is one of the cardinal virtues. The tardy man or woman steals time,—the time of those who wait. The child should be taught to come in from play upon the stroke of the bell, to be in his place at the opening of school or class, and to return directly home without delay. It is as easy to be three minutes early as ten minutes late. In the home and in the school everything should go by the clock.

*Courtesy* is, of course, as much a matter of *heart* as a matter of *habit*, springing as much from a desire to please or help as from practice in forms of politeness; but both heart and habit can be cultivated. The boy should be so habituated, for example, to removing his hat upon entering a house or meeting a lady, that he will do so unconsciously. Children of both sexes should be habituated to silence in the presence of their elders, to giving them precedence through doors or gates, to the "thank you" and "if you please" that mark the well-bred person. In addition to its value as one of the minor morals, unfailing courtesy is of the highest value in winning success in any field of labor. The young man or young woman in whom it is not a habit is heavily handicapped.

*Quickness*, though a valuable habit, should never be sought at the expense of neatness, orderliness, or *accuracy*. It comes only from persistent practice, combined with more or less of natural aptitude for rapid action of mind or body. The child must be trained to do all work, and all play too, quickly but neatly, and, above all, *accurately*. Many exercises should be set in school, involving the doing of something in a given brief time. Drills in quick addition, subtraction, and all other arithmetical operations; in reading, spelling, especially in pronouncing, writing; in running, catching, climbing, etc.,—should be a fixed part of the teacher's daily work.

But *accuracy* is the *chiefest intellectual virtue*. To know *exactly*, to remember *correctly*, to state *colorlessly*, the precise facts,—these are rare accomplishments, and no effort should be spared to attain them for one's self, or to cultivate them in those for whose training and character we are responsible. A teacher cannot be too particular about the "little things" in a school exercise. Children must be taught to respect *details*; and *not quite right but near enough*, *about the required amount*, *nearly the correct answer*, are expressions of inaccuracy and careless work, that should never be used by either pupils or teacher. In forming habits of accuracy, also, manual training is of the highest value.

*Obedience* to lawful authority, in home and state, is the corner stone of the social fabric. The child that forms the habit of intelligent obedience in home and school will grow into a law-abiding citizenhood. The one who is permitted to fix habits of disobedience to parent or teacher will in very many cases learn obedience in reformatories and prisons. There seems now to be a grave weakening of respect and regard for author-

ity in state and nation, — a growing contempt for law. There can be no doubt that this condition is directly traceable, in large measure, to the greatly increased *freedom* from *authority*, from which children suffer at home and in school. This decay of home authority has become almost a national characteristic, and it is undoubtedly responsible for much of the lawlessness that exists within our borders. Parents and teachers must enforce an intelligent obedience to rational commands, that shall be as prompt as it should be invariable.

*Veracity* is accuracy carried forward into the moral sphere. There is an intimate but not necessary connection between intellectual accuracy, and veracity. A boy may be habitually accurate in arithmetic or manual training, or outdoor observation, and yet be an habitual moral liar. *Truth-telling* must be cultivated as a distinct habit in morals. In many respects it is of the first importance. Every teacher is ready to testify that teaching and managing a school would be infinitely easier than it is now, if pupils had a fixed habit of telling the absolute truth.

**How to form Habits.**

The *how* of forming habits in school may be summed up in two words, — *drill* and *imitation.* The teacher must *drill* the pupils every day, patiently, persistently, sympathetically, until the nerve tracks of thought and action are fixed in the young brains and bodies. Pupils must be drilled in walking, sitting, standing, until correct posture becomes fixed habit; they must be drilled in spelling until the sound of a word will excite the almost automatic action of the muscles by which its letters are uttered or written; they must be drilled in the fundamentals of arithmetic until sum, product, difference, or quotient, of the

quantities used, will be presented to consciousness with machine-like precision. A pupil in addition, for example, should not stop to think *8 and 9 are 17*, but at sight of the two figures should think *17* at once. The *mechanics* of composition must be drilled into the learner until capitalization, punctuation, and paragraphing will take care of themselves, and leave the brain free to produce ideas. But drilling comes to naught if the teacher does not show in himself the habits he would have his pupils grow into. In these matters the pupils will do as the teacher *does*, rather than as he *tells* them to do. A teacher sitting behind a disordered desk cannot chide a pupil for lack of neatness; the lazy teacher cannot have a punctual school; the deceitful teacher will send out ready liars.

Character.

*Character*, the supreme end of all home training and all school work, is but another name for *habit*,—habit that possesses the very fiber of body and mind. As we sow habits in muscle and nerve and brain, so shall we, and those who come after us, reap in aptitude, in skill, in character.

# CHAPTER VI.

## THE INTELLECT: PRESENTATIVE FACULTIES.

THE first group of faculties of the mind, according to the classification given in Chapter II., is called the *intellect.* The intellect is *the general power or collective powers of the mind by which it gains and classifies knowledge.* This power or group of powers lies wholly *within,* is purely subjective; but it is capable of being quickened and energized and developed only by means of impressions received through the *sensorium,* which alone serves as the means of bringing to the mind sensations caused by objects of the material world around us. Stated in another way, the mind is dependent, for all primary knowledge, upon the sense avenues between it and the outside world. If there could come into existence a being without any of the sense organs, lacking sight and touch and hearing, and could live, it would be a mere thing, a lump of matter, however potential the germ of mind might be. The soul would be sealed within an impenetrable wall.

Definition.

The senses, considered only as physiological organs, can give nothing to the mind; for the sense organs of many idiots and the lower animals are as well developed and are as physiologically perfect as those of the cultivated scholar. The senses can only send in to the brain certain impressions made upon them; and it depends upon the something within the brain, called *mind,* what

*knowledge* shall be made out of these impressions, or the molecular disturbances which they set up in the central ganglia.

**The Senses Objective.** The senses are called collectively the *objective presentative faculties*, because through them objective impressions are presented to consciousness. The special function of the senses is *sensation*, a responding to any external stimulus that affects nerve tissue. The corresponding function of mind in referring these sensations to their external causes is *perception*. Sensation and perception taken together may be called *observation*.

A full discussion of the function of the senses as such would lie mainly in the domain of physiology, and therefore largely outside the domain of psychology. In this chapter the *psychological* values of the senses will be considered.

**Touch, and Temperature Sense.** Touch may be said to be the *basic sense*. It is the one out of which all the others have developed, in the progress of life from lower to higher forms, and is the one through which the child gets his *first* impressions. Lower life forms, like the oyster, show sensitiveness to *touch*, to impressions upon the surface of the body; but most of these forms have no organs of sight, or hearing, or other senses, so distinct in the higher animals and in man, and the fully developed sense organs of man are merely modified organs of touch. There must be *actual contact* of something upon the proper surfaces of these organs before there can be sensation. Sapid substances must touch the tongue in order to be tasted; the particles thrown off by odoriferous bodies must touch the olfactory region of the nose before there can be a percep-

tion of smell; light-vibrations must beat upon the proper surface in the eye before there can be sight. Many of the impressions which seem to come through the other senses are found, upon close inspection, to be derived from the sense of touch, or some of its immediate modifications. The term *touch* has been extended to include the sensations of temperature and pressure, or resistance, as well as those of "common feeling" derived from the body as a whole. It is considered safe to say that the *temperature* sense and the *muscular* sense are distinct from that of touch proper.

**Touch, and Temperature Sense, defined.**

Touch may be defined as *the sense through which we gain percepts of surface and texture.* By touch we determine the smoothness or roughness of surfaces, and acquire such concepts as *silkiness, velvety feel, coarseness,* of fiber, etc. The temperature sense is *the sense through which we gain the percepts of heat and cold.* It has been found that there are areas upon the skin which are sensitive only to heat, others that are sensitive only to cold.

**Muscular Sense.**

The muscular sense is *the sense by which we perceive pressure or resistance to muscular action.* This sense also enables us to determine shape, size, and weight.

The distinction between these three senses — all modified forms of the generic sense of touch — may be easily illustrated by a simple experiment. Take an apple in the hand, and pass the fingers and the palm lightly over the surface. From this light contact you perceive the surface to be smooth and cool. By slightly tightening the grasp as you pass the hand round the apple, you determine its spherical shape, its size, and degree of hardness. By balancing the apple in the

upturned palm, you judge its weight from your perception of resistance to muscular effort. In like manner are acquired percepts of the surface quality, texture, temperature, size, shape, weight, and density of any object handled. A little reflection will show that these are what might well be called the *fundamental percepts of existence.* From them we derive our concepts of motion, of extension, of solidity,— in short, the concept of *matter* itself.

An interesting speculative question is suggested here: Would it be possible for us to get any idea of *extension* if we were merely a *point of consciousness?*

We could dispense with every other sense if we might retain these three, for through these there would be sufficient action and reaction of mind and the external world upon each other to enable us to live intelligent and happy lives. The marvelous history of Laura Bridgman's life is too well known to make it necessary to do more than refer to it in support of the proposition just made. The still more marvelous history of Helen Keller is also conclusive.

Sight.

It is a question not yet fully decided whether we can gain primarily through sight any other percepts than those of color, light, and shade; but there are excellent reasons, based on thorough experimentation, for believing that through sight may also be gained primarily the percept of *distance.* Through sight, after it has been taught, corrected and directed by touch, and motion of the muscles, including those of the eye itself, we gain ideas of size, shape, weight, texture, and kind of material. The visual percept of an object we have once handled and tasted and smelled, recalls the percepts gained through the

hand, the tongue, the nose; and we are again conscious of the size, shape, taste, etc., of the object looked at.

**Hearing.**

Through the sense of hearing we gain percepts of sound, of pitch, loudness, and musical time. We can also, through the ear, judge of distance and direction.

**Taste.**

The percepts of taste are complexes made up of sensations gained through the tongue and the nose. We would lose the characteristic flavor of many substances, especially of those that are aromatic, were it not for the help the tongue gets from the nose. This fact is shown in the loss or dulling of taste percepts while the nose is affected by a cold or catarrh. The simple experiment of tightly pressing the nostrils shut with the finger and thumb, and trying to taste spices, will illustrate the same thing.

The different varieties of taste may be classed under four heads,—sweet, bitter, salt, and sour. To these are sometimes added the alkaline and metallic. The tip of the tongue is most sensitive to sour and sweet; the root, to bitter and alkaline. No substance can be tasted unless it is more or less soluble.

**Smell.**

The nerves of *smell* are distributed in the mucous lining of the upper part of the nasal passages. Very little is known about the origin of odors, or how they affect the olfactory nerves. So far as smells are subject to classification, they fall approximately into the same classes as tastes.

**General Functions and Values of the Senses.**

All the senses have both a *practical* and an *æsthetic* value. They furnish us with the materials for practical knowledge, out of which the mind builds concepts, and formulates the experience that enables us to maintain exist-

ence in safety and comfort; and they supply the mind also with the elements of the feelings of beauty, delicacy, and refinement. As has been shown, the sense of touch, with its immediate modifications, is the sense through which comes our most valuable knowledge of the outside world. The *visual sense* ranks high in both values, the practical and the æsthetic, but is preëminently the minister of the æsthetic feeling. Next to the eye ranks the ear, in both values.

If a man should suddenly lose the sense of touch, with the muscular sense and that of temperature, he could not live long. He would be unaware of cuts, blows, burns, or other accidents, unless he happened to *see* them. So in the highest degree, touch and its modifications are *protective*. Taste and smell are also protective senses, both standing guard over what passes into stomach or lungs. Taste and smell also directly assist digestion, food which smells good and tastes good being more readily digested than that which is insipid and inodorous.

**Education of the Senses.**

The expression *education of the senses* means, of course, the training of the mind to the proper use and enjoyment of the materials which the senses furnish to it. It is the *mind*, not the eye, or ear, or tongue, or brain, that sees, or hears, or tastes. The mind will see only what it is capable of seeing, however much more there may be to see, and however ready the eye and nerve fiber and brain may be to do their own work. The artist or the poet, or any one of cultivated mind, will see infinitely more in the blending of colors of earth and sky than can the untrained plowboy to whom the most splendid sunset means no more than an indication of the time to stop

work. The near-sighted botanist, peering among the roadside plants, will see what his dog at his side cannot see, though the *eyes* of the dog are better than the man's. No power of mind or body is given us which it is not our duty to cultivate and train to right functioning. All the senses should receive proper education, in both their practical and æsthetic service. Even those senses that are usually supposed to have least practical or æsthetic value, as smell and taste, should have a full share of attention. As has been said, they are *guardian* senses, and in proportion as they are trained to distinguish between helpful and hurtful substances will they be able to prevent the entrance of bad food and bad water into the stomach, and of bad air into the lungs. There can be no doubt that typhoid fever, diphtheria, and enteric troubles would be far less common if foul odors and evil tastes fell upon trained olfactories and palates instead of upon heedless ones. It is more than possible that we might have better bodies and sounder digestions if those who preside over the destinies of our kitchens had trained and discriminating noses and tongues. Smell is also capable of giving great æsthetic delight. In all ages the use of delicate perfumes has been an indication of refinement.

**All Senses should be cultivated.**

It is easy and pleasant to have in school an occasional exercise in "telling by the smell and taste." In the season of fruits and flowers, the children can bring apples, pears, grapes, roses, violets, and similar articles, to school, and take turns in identifying them by tasting or smelling *with the eyes shut.*

The chief means of training the ear is, of course, ***music.*** Unfortunately, so many teachers know so little

of this themselves, that they cannot use it successfully. It is to be hoped that it will not be so very long until every public school will have its piano, and the public school teacher will be fitted to use it in cultivating the love of song and the sense of melody in every pupil. Music is a powerful means of successful management of a school.

But aside from music there are simple exercises which will serve the twofold purpose of *training* the ear and *testing* it. Blindfold a pupil, and have him judge from what direction and from how far away some slight noise comes, and by what it is produced. The ticking of a watch, the tapping of a bell, the snapping of the fingers, are among the many simple sounds that can be used in such experiments. The results of these exercises may reveal to the teacher serious defects of hearing in some children, and indicate why these pupils have seemed dull and indifferent.

**Ear Training.**

It will be found an excellent plan, too, to direct the attention of the pupils to the many different sounds in nature, — the chirp of the cricket, the hum of the bee, the song of birds, all the multitudinous music of animate wood and field, — and train them to note the differences of loudness and pitch in these sounds. The heart as well as the hearing can be cultivated in this way; for if the boy can be got to prefer listening to a bird to throwing at it, his humanizing has had a fair beginning. By setting the pupil to attending with his *ears*, he may be led to attend with other senses, and grow into a deep and reverential appreciation of nature.

The visual sense should receive its training together with, and to a large extent by means of, the training of the other senses. Especially should *eye* and *hand* be

trained together. The usual school exercise for this is drawing, and drill in drawing may be given by a teacher who cannot himself draw. It is far better that the child should be given paper and pencil, and be permitted to practice in his own fashion the drawing of simple objects, than that eye and hand should get none of this training.

But there are other ways of developing the power to see, and the power to perceive through skin and muscle. Objects of different materials, sizes, shapes, weights, and textures, can easily be provided in any school, and the children will welcome opportunities to distinguish these by handling and seeing them. Drills in estimating distance, size, and weight, through touch and sight, will be greatly enjoyed. In every case, estimated distances, weights, and dimensions should be verified by exact measuring and weighing. A common laboratory experiment in psychology, which may easily be imitated in any school, is to use small bits of cork, of known weight, in determining sensitiveness to pressure. By placing these weights, one at a time, upon different parts of the hands or face of the same pupil and upon different pupils, it will be found that some parts of the body and some pupils are much more sensitive to pressure than others.

**Tests on Muscles, Skin, and Eyes.**

An excellent eye test is to draw a line upon the blackboard, and have the pupils, in turn, put a dot at what they believe to be its middle point; or have them draw on another board a line which they judge to be of the same length. Two other suggestive exercises may be mentioned which test the area, or rather *sphere*, of conscious vision. While a pupil is looking fixedly at some point in direct line with his eyes, the teacher or another

pupil may place objects anywhere within the hemisphere in front of him, and the readiness with which he identifies these objects without turning his eyes will show his range of vision. Place a number of familiar small objects not too close together on a table or desk, and cover them with a cloth. When ready for the test, jerk the cloth away, and let the pupils look at the objects (which they must not have seen there before) for two seconds, or less time; then cover the objects again, and have each pupil tell what ones and how many he saw. With different colored cardboards or bits of paper, the teacher may also test his pupils for color blindness.

**Results to be recorded.**

All these exercises should be almost wholly in the nature of play rather than routine work; but the teacher should, under no circumstances, fail to make careful and accurate record of the results. These records may include the age, sex, social rank, health, and general advancement of the pupils; for while such items are not of direct value to the teacher, still they are interesting, and are of value to the sociologist. From such tests and records the discerning teacher will be able to draw valuable conclusions regarding special aptitudes or special defects of his pupils. These combined tests and training drills should be supplemented with general observation work of every kind. The eye should be trained to take quick and accurate note of everything that comes within its view, — objects and changes in nature; pictures, buildings, machinery, — in short, *everything*, since everything may be made to furnish knowledge-material.

It is to be devoutly hoped that the beginnings in sense cultivation which are being made everywhere will soon grow into a full share of the time which has

heretofore been spent in word cramming. Teachers of children have been criminally neglectful of those broad and open highways to the child's mind, his senses, and have tried to substitute word cramming for sense training.

**Intuition.**

There is another faculty which can properly be called presentative, since it presents knowledge to consciousness. This is *intuition*, classed in Chapter II. as the *subjective presentative faculty*. The term *intuition* has been used in various senses, of which it is necessary to note only that most generally accepted. It is used, like many other names in psychology, to designate both a *faculty* and a *product*. As a faculty, it may be defined as *the power by which we know without proof*. As a product, an intuition is *a primary concept occasioned by, but not formed from, sense perceptions*. Our intuitions are concepts of being, space, time, and cause. To these have been added by some writers the concepts of beauty, goodness, truth, and God. We are said to *intuit* (that is, to know without proof) the separate existence of matter and self,— the existence of matter as being in space; the existence of self and the occurrence of events, in time; that all things are caused; and that like causes produce like effects. These concepts are called *necessary* truths. The mind must believe and accept them as soon as they are presented, in order to save all other knowledge from chaotic confusion.

**Theories of Intuition.**

There are two theories regarding intuition, which have been more or less wordily set forth by those who have held the one or the other. One is that intuition is an *innate power* of the mind, a distinct activity, like the memory or the will; and that its

function is to form certain concepts as soon as the mind has reached the right stage of development. The other explains our intuitions, not as the results of the work of any special innate faculty, but as the experiences of the individual or of the race. According to this view, each individual, in the development of the human race, has discovered certain relations of things, has acted upon and lived according to these relations, and has transmitted the knowledge of them to his offspring, who in their turn have added to this knowledge similar experiences of their own; and so on, until the accumulated experience becomes *intuition.*

Without going further into a discussion of the difficulties met with in any attempt to explain intuition, it is enough to say that we do have consciousness of *time*, *space*, and *cause*, and these concepts are necessary to our intelligent and confident use and enjoyment of our environment. The presentations of intuition are as universal and as reliable as the presentations of sense. To cultivate the senses alone and neglect or decry intuition is to end in a blind materialism. To cultivate both objective and subjective sense is to grow from the lower to the higher life.

# CHAPTER VII.

## THE INTELLECT: THE REPRESENTATIVE FACULTY.

NO real knowledge would be possible if percept followed percept day after day, without leaving any permanent record, and if what is in consciousness now could not come into consciousness again. The senses might make presentation after presentation without any resulting growth of mind, if the different percepts could not be *re-presented* to consciousness. The power which the mind has to reproduce its own former states is called *memory*. *Imagination* is usually described as a representative faculty coördinate with memory, but a little analysis will show that what is thus miscalled imagination is simply memory recalling *images* which have been in consciousness. Imagination is the creative faculty, and will be discussed as such later.

Definition.

The functions of memory are to *retain* and to *reproduce*. By some psychologists a third function is given it, that of *recognizing* or reknowing the thing remembered.

Functions of Memory.

It is open to question whether it is memory or consciousness that recognizes (reknows) past mental states. Ladd makes recognition an essential function of memory, and says there is no real memory of past states of mind unless recognition takes place. But quite frequently some thought, or phrase, or image, will come into the mind, which we believe to be new, but which

we later accidentally identify as one we had had before. Memory, in such cases, *retains* and *reproduces*, but recognition does not take place. It seems possible, then, to retain ideas which will not be recognized at all, unless under some unusual stimulus.

**Nothing is wholly forgotten.**

There is excellent ground for believing that everything that makes even a very slight impression upon consciousness is faithfully retained. It is a peculiar fact that strong impressions made upon the muscles, nerves, or brain, *persist* for some time after they are made. For instance, if we look steadily at a bright window for a few minutes and then close the eyes, we can still see the window, not as we did with the eyes open, but as if it were a *picture* printed on something within the eye. A boy who has plowed all day will, if unaccustomed to such work, "plow all night." He not only dreams of plowing, but his muscles actually work. In the delirium of fever, the decay of old age, organic brain disease, or imminent danger of violent death, as by drowning, countless apparently wholly forgotton scenes and thoughts and experiences of long-gone years come into consciousness again. Old people readily recall what took place in their childhood; to the drowning man his past life unrolls like a scroll; an ignorant servant has been known to recite, in the delirium of her fatal illness, passage after passage of Hebrew which she had heard her master read years before. It is noteworthy, that, as people grow older under normal conditions, they are apt to return more and more to the ways of doing and living, to the habits and opinions, of their earlier years.

Attempts have been made to explain physiologically how memory does its work, by supposing that every

mental state, every feeling, every act of will, makes an impression on the brain cells, or is accompanied by, or is caused by, some change in these cells, and that these impressions or changes are in some way made permanent. Then when the blood is made to flow through these changed cells more strongly than usual, as by an effort of the will in trying to remember, the mental states corresponding to the cell changes again appear in consciousness. It will readily be seen that the explanation needs explaining.

**Physiological Explanation of Memory.**

But the physical basis of memory is more readily discernible than that of any of our other faculties except the presentative. There is, for instance, a real *muscle memory.* A swimmer never forgets the swimming stroke, even though he may not use it for years. One who has been a skillful operator on a writing machine will automatically fall into the right fingering of the familiar keyboard, though he may not have touched a machine in months.

**Kinds of Memory.**

Memory, as regards its relation to will, is of two kinds, — *involuntary* or spontaneous, and *voluntary.* Involuntary memory is called *remembrance;* voluntary, *recollection.* Remembrance is a part of the "mental current" that flows unceasingly through our waking, and much of our sleeping, consciousness. On this mental stream are carried bits of song, familiar sayings, fragments of conversations, pictures of places, *suggestions* to do this or that, — every rag and tag of former mental states, mixed with the sense impressions and thoughts that are all the time spontaneously arising. This stream of remembrance will often, in spite of every effort at prevention, sweep attention aside, and fill

**The Stream of Remembrance.**

and overflow consciousness. There are two kinds of "drift" upon its surface that are worth looking out for: one is made up of images, ideas, suggestions that may prove valuable in starting trains of connected thought; the other is made up of ridiculous or evil suggestions, sometimes almost seeming to be made by some one or some thing within us. Out of the first kind of drift we may get the key to a difficult solution, an apt quotation, or a subject or a thought for an essay,—numberless "good ideas." Out of the second come often many of our severest temptations. The tide of remembrance is in constant flow, except perhaps at times of the most intense concentration of mind, and ebbs and rises according to the varying power to *fix attention* upon some certain object of thought. One who gives himself up to remembrance is an idle dreamer, spending his time in reverie and air-castle building; and some unfortunate circumstance may at any time cause his fancies so to possess his consciousness that he will cross the line between *sanity* and *insanity*.

Recollection.

Voluntary memory, or *recollection*, is the faculty acting under control and direction of the will. We may desire to recall some part of our accumulated knowledge. An effort of the will is made to bring the fact wanted back into consciousness, and soon it is re-presented to us, often apparently coming of itself, oftener *led* by related ideas. One of the oddities of memory is the queer feeling of loss—of mental "goneness"—we experience when a name, or date, or fact, which we were just now conscious of, slips out of the mind. By steadily focusing attention upon the place where the idea was, we can usually bring it back.

Generally the recall must be effected through *association;* that is, running the mind over ideas connected in some way with the particular one desired, until we find what is wanted, as when we say over the alphabet to find a name. At other times memory brings up ideas faster than we can use them. In such a case, as in writing an essay or making an extemporaneous speech, we can keep a number of ideas waiting in the anteroom of consciousness until we invite them to enter and be of service. A rapid speaker or writer must have many ideas in sight besides those he is expressing. Sometimes memory *begins* work under volitional direction, but seems to continue it automatically. This is illustrated in the case of a good platform speaker. He fixes his attention upon the line of thought he wants to present to his audience, and memory immediately begins to supply *words* for speech, and continues to do so without conscious effort. Indeed, even the *thoughts* themselves seem often to come automatically, after a beginning is made.

Memory may be further described as *verbal* and *logical.* Verbal memory has especial facility in retaining and reproducing *words* and their combinations. One with a strong verbal memory will readily commit and reproduce the exact words of a definition or rule, of a poem, or a passage in history. For such a person it is easier to memorize than to understand, and memory will be made to do the work of the thinking faculty. A logical memory finds it difficult to hold the exact language in which a thought is expressed, but readily retains and recalls the thought itself. A pupil with a good logical memory must understand what he studies in order to

**Verbal Memory.**

**Logical Memory.**

remember it, and prefers to recite the *substance* of a passage in his own language. There is no reason, apparently, why it should be true, but it is true often, that a strong verbal memory is found in minds very weak in the other faculties.

Different persons are endowed with memories that vary in many other ways than those mentioned in the preceding paragraphs. One person has an excellent memory for *ear* impressions; another can more readily retain and recall what he gains through the *eye*. One person will remember arithmetic well, but cannot learn a Latin declension; another can commit history with little difficulty, while he has great trouble in remembering the generalizations of science. Wide variations of memory are, however, comparatively rare; and it may safely be said that one who has a good memory for one class of facts can remember any other kind equally well, if he will only set himself to do so. An "all round" memory, one that will hold and readily reproduce everything committed to it, — sense impressions, words, facts, thoughts, — is greatly to be desired; and no effort should be spared to make what memory we have as effective as possible. It should be assiduously trained, both to verbal exactness and to logical association of thoughts.

**Mnemonics.**

A system of memory training is called *mnemonics*. There are various such systems of cultivating the memory, some of them old, some new; many of them artificial and cumbersome, wrong in principle, and failures in use; a few correct in theory, and more or less successful in practice. All that have been found in any degree helpful are based upon some or all of the *laws of memory*. These laws may be

named as follows: (1) the law of *use;* (2) the law of *interest;* (3) the law of *attention;* (4) the law of *repetition;* (5) the laws of *association,* of which there are several.

**Law of Use.**

Memory, like every other faculty, of either mind or body, is developed by using it. The law of use runs through all nature. Powell says the body is, in all its organs, the result of *work.* All through nature it is true that failure to use means *degeneracy.* If an organ ceases to function actively, it becomes useless. Some of the religious devotees of India hold an arm in a certain position without using it, until it becomes shriveled and fixed, so that it is no longer obedient to will. Through lack of proper exercise, memory often becomes weak and unreliable. The one sure way to strengthen a muscle or memory is to *use* it. A *notebook* is a dangerous and unruly servant.

An analysis of the numerous widely advertised systems of memory training will show that they agree in two essentials, — the necessity of putting *something* into the memory as a basis to start from; and the *association* with this of the things to be remembered. The best brief direction for properly training the memory is, *use it according to the laws of association.*

**Law of Interest.**

In the case of memory, as of everything else, *interest* is the best spur to use. We more actively and effectively use the memory in the acquisition of those things in which we are most interested. In other words, we *remember what interests* us. But mere superficial interest is rather detrimental than otherwise to good retention; for a wandering curiosity, flitting here and there, distracts attention, and the mind does not dwell long enough upon any one thing to get it

fixed in memory. This fact is often amusingly illustrated by the evident distraction of sightseers, who, driven by a greedy curiosity from point to point of some great exposition or of some strange city, are unable to fix any valuable acquisition in mind, and cannot afterward give any connected account of what they have seen.

**Law of Attention.**

The law of attention, briefly stated, is, *We remember what we give careful attention to.* It was noted in a preceding chapter that the best attention is that which is due to interest; so the laws of interest and attention, as regards memory training, are very closely connected. What is committed to memory by *forced* attention is very poorly retained. Every one has had the annoying experience of trying to read an uninteresting book, or to read something while the mind was occupied with other matters. Under such circumstances, a paragraph or sentence may be read and reread, without its making any permanent impression upon consciousness. The mind's *retention* is directly proportioned to its *attention.*

**Law of Repetition.**

Frequent conscious repetition of anything tends to fix it in memory. By persistent repetition of effort we learn to write, to row, to sew, to do anything requiring manual dexterity. We fix the multiplication table and other such matters in mind by constant repetition. But mere perfunctory repetition rather serves to prevent than to aid retentive acquisition. There seems to be a limit beyond which repetition is of no service in memorizing. The mere conning over a lesson, without interest or real attention, seems to make it more difficult to learn. The teacher should always be careful to introduce *variety* into his repetitions, in drill or review, and thus keep interest awake.

The element of *time* enters into acquisition by repetition. A lesson is more readily and thoroughly learned if it is laid aside after it has been gone over once or twice thoroughly, and then is taken up again some hours later, than if the same time is put upon it consecutively.

**Laws of Association**

*Association of ideas* serves to name very aptly a mental phenomenon which is, like all other mental phenomena, in no wise explained by merely naming it. By this phrase is meant the grouping-together of impressions and ideas, so that when one member of a group comes into consciousness, the others of that group will also be remembered. The process by which these associated ideas follow one another into consciousness is called *suggestion*. We say, "That remark reminds me of [suggests] something I heard the other day." We are often wont to verify a date or an event, not by reference to a calendar, but by recalling some other occurrence, perhaps quite trivial, with which the first is associated in some way. We may, for instance, recollect that a certain important telegram which we received years ago, reached us on Sunday, because we remember hearing the ringing of the church bells while reading the message.

**An Experiment in Association.**

In conversation with a friend, some chance word may start a train of associated ideas that come trooping through consciousness during a brief lull in the talk, and the next thought uttered may therefore be apparently totally disconnected with the previous remarks, although the association in the mind of the speaker may be very close and coherent. There is no more interesting psychological pastime than to start a conversation with a friend, and, after making note of the first remark, let the talk drift naturally and spontaneously for a

quarter of an hour, noting the remark made at the close of that time. Then try to trace back the conversation, and see along what line of association the mind traveled from the first to the last remark. The suggestion of ideas is also illustrated by the way in which uneducated people often go into unimportant details in narrating some occurrence. All the details are closely associated in their minds, and, in the absence of a trained power to select and combine, all are given equal prominence.

Various names have been given the laws of association. The following are, perhaps, sufficiently exact: (1) law of *contiguity* in time and place; (2) law of *similarity;* (3) law of *sign and thing signified;* (4) law of *cause and effect.*

**Law of Contiguity.**

We easily associate events that happened at the same time or in closely consecutive times, even when they occurred in widely separated places; we also associate events that have occurred in the same place or in contiguous places, though perhaps at widely different times. Many most valuable associations are made between events occurring together or contiguously in both time and place. We associate the Columbian Exposition with the great railway riots of 1894, because they were both at Chicago, though at different times. This is association through identity or contiguity of *place.* We often find it helpful to learn United States history by "administrations," because the events that occurred during a given administration are grouped together in *time.*

The element of *time* is essential to most association in place; it is necessary, for instance, that we should not merely remember that Chicago was the place in which occurred both the Columbian Exposition and

the railway strike, but we must also remember which occurred *first*. So in learning a new road or the streets of a strange city, we not only associate the prominent objects that serve as landmarks, by their proximity in *place*, but also by the order in which we passed them in *time*.

**Law of Similarity.**

We associate things that are *similar*. The spelling-book writers have abundantly availed themselves of this law, in giving lists of words of similar sound, similar form, and similar meaning. The various jingles given in some Latin grammars, by which the learner may the more readily learn a list of prepositions or some rule of syntax, are also based upon the law of similarity. Alliteration and rhyme aid in the memorizing of poetry. Things producing like effects or produced by like causes are readily associated. Although some psychologists name association by contrast also, yet it is questionable whether the mind *spontaneously* associates sharply contrasting ideas. Ugliness can hardly be said to suggest beauty, or a very tall building to suggest a hut.

**Law of Sign and Thing signified.**

Association of sign and thing signified is illustrated in the association of *things* with their *names*, of *words* and *symbols* with their corresponding *objects* or *ideas*. The importance of this form of association will be perceived at once, especially its value to the teacher. It is fundamental to all learning. The *spoken* word must suggest promptly and clearly the idea for which it stands, and also the *written* form of the word. A letter with its diacritical mark must suggest the correct sound to be uttered. The signs —, +, ÷, etc., and their spoken names, must instantly suggest the corresponding mathematical op-

erations. The rapid and accurate work of expert telegraphers and members of army and navy signal corps is due to the rapidity with which the sign suggests the thing signified.

The time taken for an impulse to travel from the eye, or ear, or the organs of touch, to the brain, and for the corresponding outgoing impulse to produce its proper effect in some muscle, is called *reaction time*. For example, the time elapsing, when all conditions are most favorable, between seeing the sign + and reading it *plus*, is reaction time, — the time consumed by the *reaction* of the sign, through consciousness, upon the muscles used in uttering the word. At first thought it might be supposed that this time is too short to be measured; but it has been pretty accurately determined in the laboratory, and found to average between one tenth and two tenths of a second.

Our acquisitions may be readily associated and made highly serviceable by the processes just described, and yet not have any logical thread of connection running through them. But ideas that are associated in the relation of *cause* and *effect* have a logical coherency that greatly aids retention and recollection. Upon seeing any new thing, the question is instinctively asked, What is its use? The child clamors to know "what is that for," upon being shown a new object. We more readily remember what and where the "date line" is, if we know the *reasons* of its being established. The names of the muscles are much easier to learn if with the names we learn the *uses*. The motorman on a street car can do his work more intelligently, and therefore better, if he knows all the effects produced by the different movements of his lever.

**Law of Cause and Effect.**

Attempts have been made to reduce the laws of association to one, or at most two. Ladd includes them all under the law of contiguity, or nearness, by which all ideas that are formed at the same time or consecutive times are associated, and one suggests the others. But analysis of any simple act of memory will show that there must be a *relation* of some kind between ideas, to cause their association; and it is equally clear that the relation of contiguity is not the only relation by which association is effected. It therefore seems better to try to reduce all the laws of association to the one *law of relation*. No fact of consciousness is of any value or of any interest except as it is related to other facts. Relativity is the bond or *nexus* that binds all our knowledge into a coherent unity. Then, too, under the law of relation can be brought several forms of association that cannot be easily named in any other way, or shown to come logically under the laws of association usually given. Renamed in terms of relation, the laws of association would be (1) relation of nearness in time and space; (2) relation of resemblance; (3) relation of sign and thing signified; (4) relation of cause and effect. The *relativity* of two or more things serves as a kind of peg on which to hang them in the memory. Knowledge of the inner *relations* between principles, rules, formulæ, and processes, in arithmetic and algebra, is the only knowledge that is of any real value in a memorized rule. History can be remembered in any way worth while, only by perceiving the relations between its important events and the subordinate events leading up to them. A diagram or outline, a written solution, a figure in mensuration, are helpful only in proportion

**The Inclusive Law of Relation.**

to the accuracy with which they can be made to show real *relations*.

It is only classified knowledge—that is, knowledge placed in its real relations—that can be most effectively retained and reproduced for use. Unclassified knowledge is almost useless. Some minds seem to be mere junk shops of knowledge, filled with scraps and fragments of learning, tumbled together as they came, with no orderliness or method in their arrangement. Others are like a well-arranged, well-kept museum, where everything is properly named and classified, and where everything can be got at without delay and with small effort.

**Classified Knowledge the only Real Knowledge.**

The law of relation may also be called the *law of understanding*, for understanding a thing is knowing it *in its relations* to other things. A thorough understanding of a process, or a method, or the meaning of a passage, greatly aids the retention of it.

One of the most important facts in the association of ideas is the great readiness with which we associate purely mental states, especially strong *emotions*, with objective sensations and their causes. A bit of landscape, a strain of music, a whiff of perfume, vividly suggests the circumstances under which it was seen, or heard, or smelled before, and calls up the feelings of pleasure or pain which formed part of our mental state at the time. A turn in the road, a tree, a glimpse of running water, a bit of landscape, will bring most vividly back to our consciousness pleasurable or painful events which may have been forgotten for years. When revisiting places, we live over again the experiences through which we had passed there.

**Sense Association.**

The suggestive power of music is sufficient instantaneously to revive in consciousness a whole evening's experience at an opera, or concert, or ball: the stage, the room, the persons, the things we said and did,—all are vividly re-presented. The faint odor of a violet is sufficient to bring back long-gone days, with their burdens of joy or sorrow, and make us live them over again, whether we will or no. It is related that a locomotive engineer who had very narrowly escaped a terrible accident at a certain place on his run, was utterly unable to command himself or his engine afterwards, at that particular point, though he was one of the road's most reliable men at other times and places.

Sight, hearing, and smell seem to furnish the most vivid associational impressions; and taste and touch, the least vivid.

## APPLICATIONS TO TEACHING.

Were it not for memory, there could be no *yesterday*. The representative faculty binds into continuity the experiences of life, and gives substance and body to the consciousness of *self* and self's ever-changing sameness.

Our efforts to acquire knowledge are effective in proportion to our power to *retain*, *reproduce*, and *recognize* what we have once learned.

All this simply emphasizes the strenuous necessity of developing the memory, of making it retentive, prompt, accurate. The teacher must plan exercises suited to the different kinds of memory, verbal and logical, and must conduct recitations according to the different laws of memory. He must not forget that different studies have different values in developing memory according to these laws; and he should assign the work, and have

it done, in each branch studied, so that it shall best produce the effect it is specially adapted to bring about.

To make specific application of these general directions, some suggestions are here given.

**Specific Suggestions.**

The verbal memory may be cultivated by requiring choice bits of literature within the comprehension of the learner to be memorized and recited properly, by having dialogues and declamations as frequent exercises, and by making verbatim reports of important news items an occasional feature of school work. The necessity for promptitude and absolute exactness of memory in such work must not be forgotten. There must be no slurring on words, no peeping in the books, no "starting" with the "first word" or "first letter."

It is not advisable to insist upon *verbatim* recitations of regular lessons, for to *understand* is more important than to remember the words used. Indeed, the best evidence a teacher can have that a pupil *does not understand* a lesson, is that it is recited in the exact language of the book. A pupil should rarely, if ever, be permitted to recite a lesson verbatim, as the text-book gives it.

To cultivate the logical memory, exercises should be given in the *why* and *how* of things, *outside* the books as well as in them. Each faculty of the mind helps the others; and to cultivate the power to *discern relations* (the judgment) develops the logical memory. The teacher should let no opportunity slip of asking *why* this was done, or *how* that was obtained, in arithmetic; of having the pupils trace the connections and causes of events in history and civics; of stimulating them to look up for themselves the etymologies of words met with in their reading.

Anything that strengthens the association of ideas increases their chances of being retained. The more associational hooks an idea has, the better its chance of hanging in the memory. Impressions gained through *eye*, *ear*, and *hand*, should be associated. A word should be *seen*, *pronounced*, and *written*. An object should be *seen*, *handled*, and *drawn*. There should be many written lessons, much drawing, and more or less frequent manual exercises.

Remembering that whatever stimulates interest and fixes attention aids memory, the teacher should study different ways of putting things before his classes. The way in which a fact is stated or a question asked often fixes a thing in the memory, as a flash light prints an image on the photographic plate.

The several branches should be so taught that their different laws of association may have their full effect. The events of history and the facts of civics are to be associated in *time* and by *cause*; concepts derived from map study, map drawing, and map molding, should be associated in *place*; new words in reading must be associated with their proper pronunciation and *meaning*; the organs of the body, as studied in physiology, will be remembered in association with their *uses*.

**Many Things should be forgotten.**

It is a part of everyday experience that the memory drops many unimportant details, and retains only the more valuable facts. The teacher should therefore not present all facts to his pupils with equal vividness, but should select the *central* ones, give them preëminence, and group the others around these. With a single important fact, many associated details can afterward be fished up out of the sea of subconsciousness. Give the mem-

ory a firm and confident grasp of the main thing, and minor matters will largely take care of themselves.

The body does not retain or assimilate all the food that goes into it; neither does the mind retain or assimilate all the knowledge material that is put into it. But as, in order to secure good digestion, the food that goes into the stomach should have in it much material that cannot be assimilated, but which only serves to excite the muscular and secretory organs of digestion, so the facts that the mind acquires should have with them much illustrative material that shall quicken the mind's retentive and assimilative action.

**Memory may be fatigued and inhibited.**

Memory, like any other faculty, may be worked to the point of fatigue. To this point it should never be pushed in school or elsewhere. The normal activity of memory may also be easily inhibited; and this is allowed for by every generous examiner, for he knows that what a pupil can readily and accurately recall ordinarily, he may lose utterly, for a time, under the inhibition of nervous fear of failure. Under the inhibiting influence of fear of threatened punishment, a child may hopelessly forget the very thing he is striving hardest to remember.

### SUGGESTIONS TO THE TEACHER.

(1) Train the judgment to select from the mass of material coming into consciousness those things that are *worth* remembering, and to establish some logical connection between them and what has already been learned.

(2) Having secured the interested attention of the class, repeat and re-repeat, and have the pupils repeat,

the central facts of the lesson, but each time in a *different way.* Set a fact in as many different lights as possible. It is only varied repetition that helps memory.

(3) Impress upon the pupils that one careful reading of a lesson is worth a dozen scurrying attempts to merely memorize the words.

(4) Following the law of repetition further, have frequent reviews, — review daily, weekly, monthly.

(5) Try to show the kinship of all knowledge, and make sure that the pupils *understand* what has been studied, and have linked to-day's acquisitions with yesterday's. This can be done only by the most skillful questioning, for the average pupil is so human that he will do much to keep his ignorance hidden.

(6) Make as many associations through the *senses* as possible. If an idea can go into the mind, or be made to arise in consciousness, through all the senses, it will be more readily remembered than if it is gained through only one or two.

(7) The memory for auditory, visual, and muscular impressions, should be especially cultivated, for these are the most important. Ability to retain these, and to reproduce them promptly and correctly, lies at the core of skill; and without skill there can be no practical success in any undertaking.

## CHAPTER VIII.

### THE INTELLECT: THE RELATIONAL FACULTY.

THE natural movements of the mind are (1) to *acquire*, (2) to *retain*, (3) to *correlate*. With the presentative faculties it acquires; with the representative it retains and recalls; with the judgment it correlates.

Judgment.

*Judgment*, then, is the relational faculty, and may be defined in set terms as *the faculty by which relations are perceived and formulated*. It is the thinking faculty. Judgment has been variously called the elaborative faculty, the reflective faculty, the discriminative and assimilative faculty, the rational faculty. None of these names describes its essential function so well as the term *relational*.

*Judgment*, *intuition*, and *reason* are synonyms, being simply different names for the same thing. If such a distinction is admissible, we may say intuition is the most elementary form of judgment. Judgment is to some degree concerned in the most elementary acts of intellection. In gaining percepts, the mind must be aware of some connection or *relation* between the object which affects the senses and the mental state which is produced. The referring of resistance and color to an object is really an elementary act of judgment.

The products, in order, of the relational faculty, are *percepts*, *concepts*, *judgments*, *arguments*. It is usually affirmed that percepts are gained *intuitively*, that the

mind immediately receives, and trusts the messages sent in to it by the senses. But if judgment and intuition are identical, as it is believed a close analysis will show them to be, the judgment is the faculty by which the impressions of sense are referred to the objects which produce them, and this is the essential act in forming a percept.

**Percepts gained through Judgment.**

As will be shown later, concepts are formed by the combination of like percepts, and detecting resemblance or likeness between percepts is also an act of judgment. As the mind develops, the perception of *differences* involved in the discrimination of objects is done by the judgment. This perception of differences serves to intensify the resemblances upon which our concepts are based. To have arrived at the concept *dog*, the judgment must have selected the points of resemblance between animals designated by the term *dog*, and have combined these resemblances into one group. Every time the differences are noted between dogs and other animals, the resemblances between dogs will become more evident.

*Judgment* is a term used to name the *product* of the relational faculty as well as the faculty itself. A judgment, as a product, is the affirmation of some relation between two or more concepts, or between concepts and percepts; as when I say, "The dog is an animal," "The lion is carnivorous," "It will rain to-night." In these three propositions, relations are affirmed between the concepts *dog* and *animal*, *lion* and *carnivorous*, and between the perception of the weather as it now is, and the previous concept I have formed of the conditions likely to produce rain.

**Judgment defined as a Product.**

Argument is the combination of two or more judgments in order to reach some final judgment which is called a *conclusion*. It is the province of logic fully to discuss the combination of judgments. Some notice will be taken of it in Chapter XV.

**Summary of Functions of Judgment.**

The work of judgment may be summarized as follows: Perceiving relation between a sense impression and the object which produces it, is necessary in forming a percept; perceiving some relation or relations between percepts is necessary in the process of conception; perceiving some relation between concepts is necessary in forming a judgment; perceiving some relation between two or more judgments is necessary in constructing an argument. It is in every case the special function of the relational faculty, or judgment, to perceive these relations. It is judgment that compares, contrasts, selects, combines, and thus reaches conclusions and forms opinions.

**Kinds of Judgment.**

It is not to be supposed that there are different forms of judgment, but that there are different ways in which judgment manifests itself. We may speak of an accurate or inaccurate judgment, of an impartial or biased judgment, of a moral judgment, an æsthetic judgment, and so on; but these terms simply serve to name the ways in which the relational faculty works, or the kinds of ideas with which it works.

**Conditions of Accurate Judging.**

In order that judgment may do its work accurately and the result may be trustworthy, there must be correct observation, reliable memory, and the absence of personal bias or vivid emotion. The elements that tend to secure accuracy in judging are, (1) an abundance of clear concepts; (2) exact reproduction of these by memory; (3) freedom

from prejudice; (4) the *judicial temper*, which means the habit of looking on all sides of a question equally.

Defective judging is due to careless observation; to unreliable memory, which does not marshal all our experiences when needed; to some personal bias inherited or acquired; and to the presence of strong feeling. No one can judge in a purely impersonal way; what is called the *personal equation* must be taken into account in every decision of judgment.

Judgment is a measurer, and there must be some *standard* with which to measure. This standard is made up of our experiences in any given direction. Every act of judgment implies a comparison between some impression of sense, or concept, or proposed line of action, with some other impression already felt, or concept already formed, or some experience already gained, that is to be used as a standard. While hearing a sermon or lecture, while reading an article or book, judgment is or should be constantly at work, measuring what is heard or read by some standard which we have established for ourselves. As a teacher hears a recitation, he must constantly compare what is being done with what he conceives to be an ideal recitation, in order to judge of the value of his teaching; and each answer must be compared with (measured by) a standard answer, in order to test the correctness of the pupil's knowledge, and his ability to express it.

**Judgment a Measurer.**

*Common sense* is the name given in popular speech to a sound and reliable judgment. It is unfortunately true that "common" sense is one of the most uncommon things in the world!

**Common Sense.**

When we say good common sense is a safe guide, we

mean that judgment, acting free of personal bias, and basing its conclusions on those experiences of the individual which he has in common with mankind, reaches conclusions that can be trusted. Common sense seems to be *automatic* judgment. It is often met with in wholesome-minded persons who have had no formal education, but who have a valuable fund of experience and a ready and correct perception of relations. Such people are frequently not able to give logical reasons for their decisions, and are said to reach conclusions intuitively. It is a subject of frequent remark that many formally educated people have but little common sense: their conduct is not marked by judicious action in everyday affairs.

The fact that a man may decide correctly with a certain class of facts before him, while he may reach only erroneous conclusions in other matters, simply gives additional force to what was said above, — that judgment must use some standard formed out of consciously acquired experience. A man's judgment may be almost infallible in the buying and selling of horses, but utterly untrustworthy in speculating in railway stocks. The judgment of the collegian may be accurate in those things in which he has been educated, but worthless in the common relations of life. So apt is this to be the case, that it is frequently remarked by those who lack school training, that such a one "has plenty of *book learning*, but mighty little common sense." The man of experience has usually a deep distrust of the man of books, sometimes not unmingled with a sort of contempt. But it is the distinctive characteristic of modern education that it is doing much to remove the ground of this distrust and contempt, by giving the

mind an ***all-round*** development and training, and by connecting ***book study*** with ***hand study***. As formal education approximates the true standard, the "self-made" man cannot compete with the college-made one.

***Tact*** is another name given to a form of common sense. It means the ability to perceive the "fitness of things," and to adjust one's self to it. The *tactless* person is constantly tangling himself up in the relations of things, as an awkward man does in the dress trails and curtain draperies and rugs at a social gathering. The *tactful* person seems to *feel* what is best to say or to do, or leave unsaid or undone, in his intercourse with others. Everybody likes him, and is soothed by his presence. Tact is simply common sense mixed with sympathetic observation. It is one of the most practically valuable elements in the mental equipment of the successful man or woman. From lack of it, many a man has ruined a promising career, many a woman has become socially "impossible," through careless or ignorant neglect of others' feelings, or of the conventions of society, which, though trifling, are as fixed as law.

**Æsthetic Judgment.**

The æsthetic judgment, more commonly called the *æsthetic taste*, is the judgment at work with those percepts and concepts that excite the feeling of the beautiful. All races and all individuals have the love of the beautiful: it is common to all mankind, and there is reason for thinking that it is shared by animals lower than man. But the objects that excite the feeling are as various as the races and conditions of men. The æsthetic feelings will be considered in a later chapter.

The æsthetic judgment, or taste, is manifested in the *selection* of objects that arouse the sense of the beautiful.

One person admires one thing; another, something quite different. When we say of some one that he has "poor taste," we mean usually that he does not *judge* of beauty by the standards we use. The African belle makes holes in her nose and lips, in which to hang ornaments; the Caucasian belle thinks the holes and the ornaments look better in her ears. The uncultured man will buy flaming chromos for his walls, and gaudy carpets for his floors, because he admires them more than the work of the best artists and the finest products of the loom. Good taste, or the lack of it, is shown in the dress, the house interior, the decorations of the office, the schoolroom, the shop.

The æsthetic taste is best cultivated by means of artistic environment. In ancient Athens, even the day laborers were competent art critics, because they lived from infancy in an atmosphere of art that was the glory of Greece. Beautiful parks, handsome buildings, and rich galleries of paintings and sculptures should be among the means used by every city to cultivate the æsthetic tastes of its citizens.

Moral judgment is the relational faculty at work in matters of ethics. By it all human conduct is directed.

**Moral Judgment.**

In the exercise of moral judgment, some proposed course of action is put alongside the standard of right which we have formed as the result of experience and training; and the relation between what we are solicited to do and this standard of right is then perceived by the judgment. However fallible it may be, each man's judgment must, in morals and in everything else, be his court of final appeal. Each of us *must* do that which his own judgment affirms to be right. It will be seen later that there is, strictly speaking, no such thing as conscience "guiding and dictat-

ing:" it is judgment that guides and dictates in matters of right and wrong, as in all other matters, while conscience lays upon us the *obligation* to do what judgment affirms to be right. I may counsel with my friend in whom I place great confidence, and get his opinion as to the rightness or wrongness of a proposed line of conduct, and I may in the end adopt his suggestions and follow his advice. But it is due to my *own* judgment, in the first place, that I go to this friend rather than to some other, or that I recognize his wisdom as superior to my own; and, unless I have formed the dangerous habit of letting other people do my thinking for me, I shall submit his advice to my own judgment before acting upon it.

**Judgment the Guide.**

*Belief* is the mind's confidence in the correctness of its own decisions of judgment, is the conscious acceptance of a judgment as *true*, as expressing *real* relations. All intelligent action is based on belief. People do not willingly and intelligently do what they disbelieve: all their deliberate actions conform to belief, unless they are hypocrites.

**Belief and Doubt.**

Doubt and disbelief are inherent in some natures to a morbid degree. But the presence of some doubt is a sign of mental health: judgment is suspended until more knowledge is obtained. Doubt may temporarily paralyze action, but it should stimulate mental activity in the search for more and convincing facts upon which to base a conclusion. The best remedy for doubt of any kind, religious or other, is, of course, more knowledge. The more facts we have, the greater is the opportunity for seeing them in their right relations, and therefore the less the room left for doubt. Correct information and the judicial temper are the surest cure for disbelief or uncertainty.

## Applications to Teaching.

Judgment, being the faculty which *above all others* shows us the *way to live*, should receive a most thorough and careful training. There is more need now than ever before of the citizen of independent thought in politics, in religion, in education. There are more things to discriminate between, there is more knowledge to sift and select from, there are more theories to test, more errors to avoid, than ever before. And all this is distinctively work for *judgment*. If the schools would train for citizenship, would build young manhood and womanhood, they must look to the training of that faculty which works with the *relations* of things; for no fact is valuable *in itself*, but only as related to other facts. Even the existence of Deity (be it said reverently) is of value to us only as it is related to us, and we to it.

**Need of Accurate Judgment.**

The teacher should spend much effort in the direction of getting his pupils to *think for themselves*. They should be permitted in many matters to follow out their own conclusions. It is only by trying and falling that the child learns to walk; it is only by judging and testing the conclusions, that the boy or girl comes to independent, self-reliant manhood and womanhood. The age of six or seven is not too early for children to be thrown upon their own responsibility in *minor matters*. The law of *use* is as valid in the case of judgment as in the case of memory or muscle.

A child over five years of age has a right to be treated as a *rational* being by both parents and teacher. Children obey more readily when told why they are requested or commanded to do a thing, and, being thus taught that obedience rests upon

**Rational Obedience.**

a rational basis, they will the more cheerfully obey in those cases in which it is inexpedient to explain to them the reason for the command. Requiring rational obedience from the children will be an excellent discipline for the parents too, since it will make them sure they have a reasonable basis for their commands to their children. There must, of course, be implicit obedience; but it should be intelligent, and commands should not be whimsical and arbitrary. To demand "unquestioning" obedience in all cases is absurd and wrong.

The training of the æsthetic judgment will be further treated in Chapter X.; of the non-ethical judgment, in Chapter XV. It only remains, then, to say a brief word concerning the training of the *ethical* or moral judgment. The full discussion of this falls within the division of psychology once called "moral philosophy," but now usually termed "ethics."

**Training of Ethical Judgment.**

Spencer has left little to be said on the subject of moral education. According to him, the child's moral nature should be educated through the perception of cause and effect; that is, the child should be first taught to understand that physical pain inevitably follows physical transgression; and from this he may be brought later to conclude that spiritual suffering will more or less immediately and inevitably follow moral transgression. The value of this method becomes the more apparent when it is remembered that physical transgression is usually a moral transgression; that is, the same thing that makes spiritual transgression wrong—a knowledge of its evil consequences—makes physical transgression wrong. The child must acquire ethical ideas by learning from experience, as well as from precept, what constitutes

the rightness or wrongness of his physical and spiritual acts. He must acquire moral ideas as he acquires any other kind; and the process of basing conduct upon judgments drawn from these is the same as the process of acting upon conclusions drawn from other kinds of ideas. The child must learn from experience the relation between the careless handling of a knife and the pain of a cut; between playing with fire and the consequent burn; between unhygienic eating and the resulting digestive disturbance; between selfishness, lying, petty dishonesty, and the distrust and aversion with which teacher and companions regard him. If the child be taught rationally to observe such relations, his moral judgment becomes quickened, and many of his wrong tendencies can be made to correct themselves. If punishment must be given by the teacher, it should in every case, as far as possible, be made to appear to the child as the natural and logical consequence of his wrong doing. Punishment that seems merely arbitrary to the child, for which he cannot see a sufficient reason, has an effect upon character directly contrary to what is desired.

The highest result of character building is to make the individual understand and feel, that, to live the happiest and best life, he must live it in harmony with God's laws, both physical and spiritual, and that discomfort and unhappiness are the inevitable results of transgression.

# CHAPTER IX.

## THE INTELLECT: IMAGINATION.

**Imagination not Representative.**

IMAGINATION is usually discussed as both a *representative* and a *creative* faculty. But it seems clear that representation is no function of imagination. To represent is the business of *memory*. Surely some line of demarcation can be established between these two faculties which will prevent confusion of thought. I do not *imagine* what I have seen, or heard, or felt, or thought, or willed: I remember these things. If the thing remembered happens to be an image, it is not to be taken as something which imagination brought up. Actual visual perception of an object put the image of that object in the mind, and *memory* brings it into consciousness again. Imagination has nothing to do with it, unless to modify in some way the image recalled. Imagination may construct an image, may build something out of sense percepts, or concepts; but this creation once formed is not *reproduced* in consciousness by imagination—that is work for memory.

Imagination can and does aid in the acquirement of sense percepts. For instance, my percept of a cylinder is clearer if I can, through imagination, see the *other side* and *both ends* of the figure at the same time my eyes are perceiving the side presented to them.

The term *image* commonly suggests *visual* percepts; but it may be used also to name other percepts. We properly speak of *auditory* images, *tactile* images, etc., by which we mean either the remembered percepts originally gained through the senses, or the combinations of these which are formed by imagination.

**Difference between Imagination and Memory.**

The difference between memory and imagination is shown in the difference between a *remembered* sensation and an *imagined* one. The former is dim, dull, and seems to be a kind of echo in consciousness. The latter is full, intense, and so real sometimes that the corresponding end organ of sensation is affected as by an outside stimulus. This is illustrated in the musician's common trick of closing a piece in constantly diminishing loudness of sound until the music dies away altogether and leaves the auditor *imagining* he still hears the notes after they have ceased. The auditory image thus produced is much more real and present to consciousness than *remembered* music. A simple geometrical figure can be so vividly imagined, that it will seem to be actually projected upon the field of vision, or upon the inner surface of the lid when the eyes are closed. Both natural aptitude and education determine what sensations are best imagined in any individual case. The musician imagines new combinations of tones and melodies; the painter, new combinations of colors; the perfumer, new odors.

There is also wide variation in the ability of different persons to *remember* the percepts of the several senses. One will readily recall visual images, but not auditory; another can easily remember tactile or muscular, but not visual ones. These facts are expressed in every-

day language when we say of one person, "he has a good eye for form;" of another, "he has an ear for music." In the great majority of cases, however, *visual* images are much more readily imagined and remembered than any others.

**Imagination aids Memory.**

Memory and imagination work in close association; and each helps the other, but neither does the other's work. Imagination helps to fix a percept or concept in memory by making it completer and clearer; and often, when memory but dimly recalls some matter of past experience, imagination offers various modifications and additions, until perhaps the right combination is made, and the result is recognized as a correct representation of the thing which was at first but dimly reproduced. Even in such cases, the imagination does not *reproduce*, but merely adds to or alters what has been recalled, until a combination is made which consciousness recognizes as correct. This work of imagination is precisely like that of a friend who, when we are suffering from a temporary lapse of memory, suggests words to us until some happy similarity of sound causes the word we are trying to recall to become distinct in consciousness. Memory, in turn, furnishes materials out of which imagination builds its products.

**Imagination defined.**

Memory *reproduces*. Imagination *modifies*, *combines*, *creates*. It modifies when it merely makes some change in an idea or a percept, without altering its essential form or character; it combines when it puts two or more percepts or concepts together to produce something characteristically different from either of them; and this combination in its highest forms is *creation*, the difference being one of degree rather than

of kind. Imagination is creative when its products are unlike any actual reality, when the combination of percepts or concepts is so thorough that they are fused together into a harmonious whole distinctively different from any other thing. Imagination can create no new material: it builds new things out of materials already furnished by the perceptives and memory. An artist may paint a face more regular and beautiful in form and feature than any real face, but analysis will show it not to contain any new facial element. The poet or the essayist may put two or more familiar concepts together so we shall see totally new relations between them. This is the essence of literary art. Van Norden attributes this sort of work to the highest activity of the elaborative judgment, which perceives these deeper and more significant relations. It is not easy to distinguish between the highest work of judgment and the highest work of imagination; and this serves to illustrate the essential unity of mind, — that no one faculty can work alone, the mind works as a whole. But judgment cannot act until thought objects are before it, then it perceives relations. It is the peculiar office of creative imagination to set objects before judgment in a new way.

**Fantasy.**

Imagination has various forms, or rather various ways of manifesting its activity. The lowest is perhaps what is called *fancy* or *fantasy*. It is imagination freed from the restraint of will and the criticism of judgment. It is commonest in daydreaming and reverie, when we give ourselves up to the current of remembrance, while fancy plays with the contents of consciousness, and colors them with the tints of unreality, or combines them into fantastic or grotesque forms.

But even fancy may become creative, and give such results as the "Arabian Nights," "Gulliver's Travels," "She," and that exquisite bit of fantastic composition, the "Culprit Fay." Fantasy is usually characteristic of the idle mind: it requires effort to direct imagination by the will, and test its products by judgment. No effort is required for the "play" of fancy. It is noteworthy that this is the only faculty whose activity can be called *play*. For this reason, among others, it may become dangerous. Permitted to run riot, imagination becomes narcotic, and is almost as dangerous as opium or hasheesh. The victim seeks ready escape from the unpleasant realities of life in the glowing presentations of fancy: he may set as deliberately to work as the opium smoker to build for himself palaces and gardens of enchantment. A person will come out of such an orgy of imagination dazed in mind and even *physically* stupefied, as by the fumes of a drug. The difference between the sane man and the insane one is, that the latter looks upon the products of his fantasy as real, the former is aware of their unreality.

**Danger of Fancy.**

In widest contrast with fancy is what may be called the *practical imagination*. Its work is narrowly limited to modifying and combining the facts of experience so as to produce ideas only slightly different from what the mind is accustomed to. Plain, "practical" men have this type of imagination: they cannot to any considerable degree modify their concepts, whether freshly gained, or remembered. Such men are always intensely conservative, not being able to picture vividly anything different from their own experiences. They adapt themselves slowly to any new environment. We sometimes grow impatient with these

**Practical Imagination.**

people, but they are very necessary to stability of type in race or government. They are the balance wheel of the social machine, and serve to regulate and correct the too strenuous action of the over-zealous in politics, in religion, and in education. Lack of imagination is often mistaken for sound common sense, and it does often produce the same results. Too vivid imagination becomes unpractical, sees too many visions and dreams too many dreams, leaving nothing alone long enough for it to become an integral and permanent part of a steadfast individual or national life.

**Value of Imagination.** At the same time, it must be remembered that if it were not for imagination, improvements in the arts and sciences, and therefore in the general condition of peoples, would be due wholly to accident. If nothing could be pictured as different from what it is, nothing better than what now is could be possible, except as fortunate chance might bring about changes. There is no occupation of life which may not be the better followed with the aid of imagination. The ditch digger who can see the effect of his next blow before it is struck; the bricklayer who can see the next brick in position before it is placed; the blacksmith who can shape the bar to the ideal which he projects upon the anvil,—these do far better work than those who can see nothing but their memory images or the things actually before them.

He is the successful surgeon who can, in any unusual case, accurately foresee the steps in the operation he is to perform, from the first touch of the knife to the final dressing of the wound. He is the successful lawyer who can vividly portray to a jury scenes and conditions he has never himself witnessed, but which

he believes to have been the setting for his client's conduct. He is the successful preacher who can draw vital ideals of the ethical life, models of human character and action.

In all those who most succeed in swaying men by what they write or say, there is a strong sympathy mingled with imagination. The sympathetic imagination enables its possessor to put himself at the standpoint of his hearers or readers, or to present his own standpoint so forcibly that they will be brought to see things as he sees them. No one has more need of this sympathetic imagination than the teacher. He must establish between himself and his pupils magnetic currents of understanding that will enable him to see with the learner's eyes, and feel with the learner's feelings. In no other way can the teacher put himself at the center of the pupil's difficulties, and undo the tangles for him. The teacher must be in the highest sense a mind reader: this he cannot be, except as he can, through sympathetic imagination, create in his own mind the conditions that exist in the mind of the pupil.

**Sympathetic Imagination.**

A popular supposition is that the poet, the novelist, and the artist have the greatest need of imagination. But the creative imagination of the writer or the sculptor differs from that of the engineer or the scientist only in the directon and purposes of its activity. As the writer must put words together so they will say out to others the deep-lying and unsuspected relations of the things they name, so must the engineer put together truss and beam and girder so they shall express the ideal structure prefigured in his imagination. As the sculptor must see

**Imagination in Art and Science.**

in the rough block of marble the form of immortal grace which his creative thought has placed there, before he has struck a blow upon his chisel, so must the true scientist project from his imagination the connected story and work history of rock and raindrop, of atom and abysmal ocean depth. In a true sense the scientific imagination is poetic and artistic. Science of the right sort does not stop with the mere observation and classification of phenomena, but is ever trying to find *cause*, an underlying unity for all facts. To this end creative mind works, picturing hypotheses, theories, possible combinations that shall contain the law binding all known facts into harmony. To be a mere observer and collector of facts is not to be a true scientist. The facts, of course, we must have; but he who does nothing but collect them is only a hod carrier to the master builder, who takes them, and sets them, by imagination, in this combination and in that, until he sees at last their real relations. Then the boundaries of men's knowledge are widened by a world's breadth, and the soul is filled with new truth.

**Inventive Imagination.**

The inventor is "of imagination all compact" as much as the poet. He *sees* the completed machine at work, days, months, or years before a model can be constructed. He conceives of a possible combination of mechanical elements that shall produce totally new results, and forthwith sets to work to embody the ideal, the imagined, in the actual. The modern typewriter is an excellent illustration of creative imagination. All its elements are simple and familiar, — two or three springs and a few levers, — but the combinations of these elements, and the results produced, are entirely original, being unlike anything that had

been seen before. A typewriter is, in a true sense, a *poem* of mechanism.

Imagination enters into and colors every mental process, and intensifies every feeling. We have seen how it aids perception and memory; and it is a strong element in expectant attention,—we imagine what to expect; it gives power to conception, enabling us to see groups and classes of objects with common qualities, or to "see" those qualities abstracted and unified; it is the basis of rational hope, since we hope for things we do not have, and these we can conceive of best through imagination; it is a help to judgment, setting things in new lights, and shifting the point of view, so judgment may discover new relations. But above and beyond all, it is *creative*, making the new out of the old, showing possibilities where none was supposed to exist, discovering harmony where all was chaotic, blending and unifying what was diverse, adding constantly to the sum of wealth, knowledge, and happiness.

## CHAPTER X.

### THE SENSIBILITIES.

THE sensibilities (or feelings) are difficult to define, but it is perhaps sufficient to say that they are *mental states of pleasure and pain.* They are very complex, and intimately involved with all aspects of the mental life: consequently no hard-and-fast classification can be true. For convenience of reference and discussion, however, the sensibilities will here be presented under the three heads given in Chapter II.,—the *emotions*, the *affections*, the *desires*. The enumeration made under each of these heads is not intended to be exhaustive, but to include only those feelings which have the most direct bearing upon the teacher's work.

The lines of demarcation between these three kinds of feeling are indefinite and variable, and it is not wise to attempt a too discriminating analysis. In a general way it may be said that the *emotions* are simple feelings, having no tendency in themselves for or against their exciting causes. The language of emotion is "I feel."

**Definitions.**

The *affections* flow out toward the objects that excite them, to do them good or ill. The language of the affections is "I like," or "I dislike."

The *desires* flow out toward the objects exciting them, accompanied by the wish to possess those objects. The language of desire is "I want."

## THE EMOTIONS.

The emotions admit of subdivision into (1) the *physio-psychic*, or those having their origin in both body and mind; (2) the *intellectual*, or those arising solely from mental causes, and affecting the intellect mainly; (3) the *moral*, or those affecting our ethical relations.

### *Physical Emotions.*

There seems to be a more evident connection between the feelings and the physical condition than is found in the case of any other form of mental activity. Bodily states and the sensibilities act and react upon one another in rise and fall like the sensitive mercury and the atmospheric column. Especially is this true in the case of children, and adults in whom the power to inhibit excess of feeling is not strong. We are all the time conscious of bodily states of one kind or another, comfortable or uncomfortable. If any one of the bodily organs does its work defectively, the fact is registered in consciousness by a disagreeable feeling; if all the bodily organs are normal, and work harmoniously, we are conscious of a diffused feeling of well-being, there is a sense of vitality and health. Our consciousness of the body as a whole is called *common feeling*.

The emotions that arise out of physical conditions and affect the intellect are *cheerfulness*, *melancholy*, *anxiety*, *indifference*.

*Cheerfulness* is one of the natural attributes of health; but it, like the other physio-psychic emotions, may be attained by purely mental effort. Cheerfulness is often a marked characteristic of those who suffer acute bodily pain. The etymology of *melancholy* is "black bile,"

but it may arise from other causes than a disordered liver, and is often directly traceable to impaired nervous energy. *Anxiety* and *indifference* are more frequently attributable to mental than to physical causes; but there are forms of these feelings that have their origin in some poorly nourished or overworked or underworked tissue. Anxiety, in so far as it is a physical feeling, may be said to result from the restraint of some natural bodily activity. Indifference is usually traceable to lack of blood supply or to fatigue.

Cheerfulness is a marked characteristic of the normal child, and its absence is one of the surest indications of ill health or abnormal temperament. Melancholy, anxiety, or indifference, when they arise from physical conditions, are abnormal in the child, and must be removed before there can be effective teaching. Very often they may be remedied through the action of the mind upon the body; and the teacher's contagious cheerfulness, interest, and self-control will produce far more marked and permanent effects than all the physic of the druggists.

### *Intellectual Emotions.*

Of the emotions of the intellect, *surprise*, *wonder*, and *admiration* are closely related. *Surprise* is the mental shock which follows the presentation of anything unexpected, new, or strange, to consciousness. It is the same in kind, whether felt by the infant who is hurt, or by the scientist who stands face to face with some unexpected working of energy. Wonder is surprise somewhat prolonged and made expectant, and admiration is wonder with approval added.

**Surprise.**

These emotions are very vivid in children, and are

of great value in making the teacher's work more effective. A word, a picture, a definition, a process, presented to a class in some unusual or unexpected way, produces a slight shock of surprise that fixes attention as by a magnet. In this fact is found another reason why the teacher should lay aside the text-book in conducting recitations, and use his ingenuity in presenting the matter of the lessons in a manner that will set the pupils wondering "how will the teacher begin the next time." Writers and lecturers often give to their books and lectures titles that will occasion a slight shock of surprise, and thus gain the attention of the prospective reader or auditor. It is easy to overdo the matter, however, and by falling into the *grotesque* to defeat the purpose in view. Judiciously used, surprise is a legitimate and valuable element in spoken and written expression. The good effect of an apt way of expressing a thing is due to the feeling of surprise, often mingled with admiration, which a neatly turned phrase excites in the hearer or reader.

**Admiration.**

*Admiration* is an effective aid in ethical training, as it awakens, and blends with, the desire to be like the person admired, and to imitate his deeds. Admiration leads to emulation, a generous rivalry, and in the hands of an intelligent teacher is a powerful stimulus. It is to this feeling, so readily aroused in the young, that biography owes its value in moral training. Parent and teacher should very early give the child some account of men and women of noble character and great achievement.

*Happiness* and *sorrow* are the sunshine and shadow of childhood. Every child has an inalienable birthright to happiness. Childhood should be surrounded

with every influence that can contribute to the making of a healthy body and a joyful mind and temper. It is the absence of such influences that makes child life in the crowded slums of cities the pathetic thing it is, and turns it into a menace to the future. What can be expected of men and women whose childhood was cramped and starved in every physical tissue, and whose young minds knew no happiness? It is one of the glories of modern beneficence that it is turning more and more to children, providing them with playgrounds and parks, and sending small armies of them into the country every summer. The fundamental characteristic of the kindergarten is its recognition of the necessity of a *happy* development of body and mind.

**Happiness and Sorrow.**

But no life, of child or adult, can be filled with constant happiness, nor is it desirable that it should be. Sorrow, and its various forms of disappointment, regret, remorse, are disciplinary emotions, and give fiber and strength to character.

**Hope.**

*Hope* and *fear* are anticipative emotions. Hope is perhaps the main incentive to all human action; for, no matter how strong the desires may be, it is hardly conceivable that man would strive to satisfy them unless there was some hope of attaining their objects. If it were possible for a human being to lose hope utterly, his energies would run down below the level of brute action; for even the brutes have an expectation of fulfilled desire.

The school should to some extent be a miniature of the world; and hope should be used as an incentive to action, — hope of securing commendation from teacher and parents, hope of promotion, hope of graduation,

and hope of increased usefulness. In every instance the object of hope should be that which has its value mainly in its effects upon the growth of character.

**Fear.**

*Fear* is an instinctive emotion, manifesting itself in the infant before there has been any possible opportunity of learning to be afraid of things through individual experience. It is a protective emotion, and is especially characteristic of children. The use of fear as a means of discipline, though very common, is rarely justifiable. The readiness with which the purely animal feeling of fear can be aroused makes it a too convenient means of securing temporary obedience in the home and the school. The nurse or the mother who appeals to a "bogie" or an "ugly black man" to come and carry off a naughty child, is giving practical lessons in lying, as well as appealing to one of the lowest motives for correct behavior. The same is largely true of the teacher who relies upon fear of the rod to secure obedience and diligent study. Fear has no proper place in any scheme of true ethical training. Morality or religion based on fear is not sound. The child or adult who does right because *afraid* to do wrong is not moral. But it is true, unfortunately, that in many cases no real ethical training can be begun until opportunity has been secured through the restraining influence of fear. There seems to be no higher motive which will react upon some children and adults.

**Shame.**

The feeling of *shame*, though seemingly a purely psychical emotion, is common to both man and the lower animals. An intelligent horse or dog evidences shame at failure to secure approval, or when caught in some misbehavior. It is, in many of its manifestations, of much moral significance, being

closely allied with conscience. It may be felt by us for ourselves or for others. When we see others doing that of which we would be ashamed were we doing it, we feel shame on their account.

**Use of Shame.** The feeling of shame may be judiciously used in school training to secure correction of many faults and the formation of right habits. The pupil should be made ashamed of being tardy, or lazy, or indifferent; ashamed to be dirty, to swear, to smoke, to fight. Many a boy or girl has been spurred out of evil practices by the sharp prick of judicious *ridicule*. By most educationists ridicule is wholly condemned. It is liable to great abuse, but it is too serviceable and effective a means of good discipline to be laid aside entirely. As well forbid the use of razors, because they do harm in careless hands.

**Danger of Shame.** On the other hand, it is through shame that many young people are led *into* evil. The boy is ashamed of not being able to smoke, is ashamed when his comrades ridicule him for being "too good" to swear, or drink, or bet. Promising characters have been ruined through this "false" or perverted shame,—through being ashamed of the *wrong thing*. The influence of the home and the school must be used to correct the standards of youth, and intensify the feeling of shame at any taint of impurity. Train the boys and girls to high-mindedness, and cultivate a pride in right thinking and right living.

**Sense of Humor.** The feeling of the *ludicrous*, or the sense of *humor*, seems to be almost wholly lacking in many people; and its absence makes living less comfortable. It is a valuable element in the "philosophic temper" that is so helpful in adjusting one's self

to everyday annoyances. It softens the care-hardened face, soothes the tired nerves, and drops oil on every cog and joint of the bodily and mental machinery. The man whose genuine laugh is hung on a ready trigger is a comfort to himself and a solace to his friends. A keen perception of the ludicrous is *protective,* — it protects us against the commission of absurdities and follies, social and moral, and makes us carefully observant of the usages and manners of those around us. This is true not only of individuals, but of whole communities. The old philosopher who was undecided whether to laugh or cry at the follies and sins of mankind, would have been wise to laugh. The world has been little helped by whining pessimists; but many a folly has been laughed out of existence, and many an evil has fled before the genial shafts of the humorist.

**Humor Protective.**

Children generally have a very keen appreciation of the humorous, and this should be cultivated. Nothing is more healthful at times in the schoolroom, or more preservative of genuine good order, than a hearty all-round laugh; not guffaws or giggles, but open, honest laughter. It sends the blood tingling through every brain cell, and discharges every tense and tired nerve. A good laugh is more effective than medicine, and a great deal easier to take.

Mingled with the feeling of shame, the feeling of the ludicrous becomes an excellent corrective of questionable practices in the schoolroom and on the playground, and is often far more effective than any form of scolding or formal punishment. The egoism of the young makes it especially painful to be laughed at.

The *æsthetic* feelings are universal, and are usually quite highly developed, even in children and the lower

races of man. The distinction must be quite carefully made between the æsthetic feeling and the æsthetic judgment. It is through the judgment that we recognize a thing as beautiful according to the standard we have set up for ourselves; the feeling of the beautiful is the emotion produced by what the judgment accepts. The action of the æsthetic judgment is almost instantaneous; the feeling is prolonged and diffused. Enjoyment of the beautiful is common to all mankind; but the standards of beauty vary everywhere, hardly any two persons having the same in all matters. The æsthetic feeling and the æsthetic judgment are to be cultivated together to a just appreciation of the beautiful. The teacher must himself love beauty in order to set sympathetically before his pupils the proper standards, and direct their observation to objects worthy to appeal to the judgment and arouse the sensibility.

**Æsthetic Feelings.**

Æsthetic training cannot be begun too early in the child's life, and should be kept up till correct judgment and refined appreciation become habits. In this as in other things the country teacher has every advantage; for the source of all beauty is *nature*. Art is beautiful only as it is a transcript of nature; literature is beautiful only as it describes nature or borrows its figures from nature. The beautiful in art and literature cannot be understood or appreciated unless the original in nature is known and valued, and a knowledge of nature can be had only at first-hand. The teacher can do no better thing than occasionally to take his class or school for an afternoon walk through wood and field, and point out to the eager appreciation of boys and girls the beauties of tree and twig and leaf, of hanging vine and sturdy weed, of ferny bank

**Æsthetic Training.**

and lichened stone and rail. There is more to uplift the mind and feed the soul in an autumn afternoon, filled with the mellow light and warmth of a southward sun and the color tones of autumn leafage, than in all the rules of arithmetic and grammar. No one can live up to the large measure of happiness he may enjoy until he can appreciate the everyday beauty of air and sky, sunshine and shifting cloud, sunset and dawn. To love these is more than to know the height of Pike's Peak or the length of the Nile. The boys and girls who, having eyes, have learned to see, and can keep their minds and hearts open to all the sweet influences that nature will pour in upon them, have learned to walk with face toward God, seeing him in all his world.

When they have learned something of beauty in nature, give them a taste, if only a taste, of the beautiful in art and in literature. Put them in contact with the master minds that have interpreted nature best, and let them feel the thrill and warmth that come of every such contact.

*Moral Emotions.*

The moral emotions are so named because they directly affect and enter into the ethical life. They, together with the judgment and will, constitute the moral being. They make morality and religion possible and vital, and keep us in the upward road. Taken together, they constitute what is sometimes distinctively called *human feeling*.

**Pity and Sympathy.**

*Pity* we feel for suffering we have not experienced; *sympathy* we feel for one who either suffers or enjoys as we have. We may feel pity for the victim of a debauch, but not sympathy, unless we have passed through what he has.

The feelings of pity and sympathy are distinctively altruistic, and, intensified by love in its broadest sense, lie at the basis of all true philanthropy. They prompt us to alleviate the suffering and soften the lot of our less fortunate fellows.

**Pity and Sympathy in Children.**

It is doubtful whether pity is felt by children; for to feel pity implies the power to generalize particular forms of suffering into a generic concept, and this power is not developed in children. But with them *sympathy* seems to be instinctive or automatic. Its earliest manifestation takes the form of physical imitation. Even infants will nod, or smile, or purse the lips, in imitation of like facial movements made by nurse or parent. Every one has noticed the bodily sympathy shown in the imitative movements of children as they watch a playmate swinging, or performing some childish gymnastic feat.

**Value of Sympathy.**

A very slight cause is sufficient to send a wave of mental sympathy through a playground full of children; and each one will share in the fear, or anger, or laughter, or pain, of another, even when ignorant of the cause that produces the feeling with which he sympathizes. There seems to be something in numbers which intensifies this emotion, as every teacher knows who has felt the "atmosphere" of his schoolroom either for him or against him in some case of discipline. A class, a whole school, an audience, or an entire community, may feel the peculiar cementing force of sympathy. The teacher can use this fact to great advantage by creating an atmosphere of studiousness, of obedience and good conduct, which may be felt by every pupil, and which holds the student body firm against the disturbing influence of any refractory

member. The greatest error that can be committed in college discipline is to get the sympathy of the student body aroused on the wrong side of some administrative question.

It is the subtle force of sympathy, bodily and mental, that constitutes what is called the *esprit de corps* of a class, a school, a church; of a fire company, a police platoon, an army. Without its proper influence, the school becomes a bedlam, the church disintegrates, the army is a mob. Bodies of children and of men are held together by a common purpose and the sense of physical companionship.

Each person in an audience enjoys a lecture, a concert, or a play, by being one of many who enjoy it, far more than if he were the sole spectator or auditor; and, aside from any consideration of profit, a public speaker prefers a large audience to a small one, since the effect of what he says seems to be multiplied by the number of those who hear it.

**Epidemic Sympathy.**

Even cultured communities sometimes suffer from a kind of psychic epidemic due to the excitability of this feeling of sympathy. Illustrations of this are to be found in the waves of religious excitement or political frenzy that sweep over neighborhoods, towns, or even whole states.

**Cultivation of Sympathy.**

Of course, a feeling so powerful in its effects upon human action should not be neglected in any plan of formal education. It is with sympathy in its narrower and more usual meaning that the educator is chiefly concerned. Since children are easily appealed to through the personal feeling, their sympathies for the weakness, suffering, and helplessness of their companions and the lower animals, may be best

aroused on the ground of "Put yourself in his place,' "How would you like to be so treated?" There is in many children a thoughtless bit of barbarism, a feeling of gratification in the pain they inflict on the lower animals and on weaker companions. This must be reached and removed through sympathy. No sight should arouse the righteous anger of the teacher more quickly than that of a boy hectoring one weaker than himself, or tormenting some wretched cat or dog; but punishment should be given through the self-inflicted discomfort of the boy's quickened moral sense. Through their sympathy with suffering they have themselves felt, children may be brought to *pity* pain and misfortune in any form.

**Awe and Reverence.**

*Awe* and *reverence* taken together constitute the feeling of the *sublime*, and we are conscious of these in our sense of the sublime in nature and in our perception of the sublimity shown in some heroic self-sacrifice. The feeling of the sublime is aroused by a consciousness of extraordinary immensity or power in nature, or of intellectual or moral strength in man. The immensity of space as one looks into the starry sky; the volume and might of Niagara or the ocean; the moral courage of a martyr, — in the contemplation of these, the feeling of the sublime swells our breasts. Awe and reverence cannot be felt without more or less profoundly affecting the moral nature, and it is doubtless through these that savage man has risen to any conception of Deity.

These feelings are closely associated with the feeling of the beautiful, and through admiration and love of the beautiful the growing mind may easily be made subject to the profounder feelings of awe and reverence.

The human *conscience* has been the cause of much heated debate and profitless controversy as to its origin and its functions. Into origins it is not the purpose of this book to go. It is enough that conscience is part of the mental endowment of the normal human being, and it does not specially matter when or how he came by it.

**Conscience.**

Conscience should be classed with the feelings, since it gives pleasure and pain. But, added to its simple pleasurableness or painfulness, there is another element which makes it distinctively the *moral feeling*. This element is the sense of *obligation*, the feeling of *oughtness*. "I must" is the expression of conscience.

**Action of Conscience.**

Conscience does not manifest itself except on occasion of acts or purposes that have a moral quality; and in every case conscience *waits on judgment*. The order of action seems to be this: two lines of conduct lie open before us; we judge of the rightness or wrongness of each by standards formed from experience and by education, and finally decide that one is *right*, the other *wrong;* the feeling of *oughtness* immediately arises, and persists until we do what judgment has affirmed to be right. When the right thing has been done, the feeling of *obligation* ceases, and is succeeded by a glow of approval. If we should, as is too often the case, do what judgment has pronounced *wrong*, conscience begins, *as soon as the determination is formed and before the deed is done*, to cry out, "I ought not," "I must not;" and after the wrong deed has been committed, conscience immediately *painfully disapproves*. The intensified disapproval of conscience, mingled with moral shame, is *remorse*.

The feeling of obligation to do the right is universal;

but what is right in any particular instance is largely a matter of individual judgment. There are certain things that have received general if not universal acceptance as being wrong, others that are as universally pronounced right. These things upon which a general agreement has been reached are set forth in the Ten Commandments more clearly than anywhere else. But the innumerable minor points of right and wrong that arise in a day's intercourse with our fellowmen must be settled by each individual for himself: the necessity is supreme that he must be a "law unto himself." No man holds another's judgment or conscience, and, so long as a fellow-mortal faithfully does what he believes to be right, no one is justified in thinking evil of him.

When it is said that a feeling of oughtness is universal, it is not meant that every individual has it. There are doubtless many degraded human beings, and possibly not a few highly cultured ones, in whom there is no sense of obligation, or, if any, a very feeble one. In such people the *knowledge* of right and wrong may be as clear as in any one, but the *feeling* of obligation *to do* the right is absent. Such cases present some of the gravest problems in sociology,—problems which psychology will doubtless some day aid in solving.

**Cultivation of Conscience.**

Like other feelings, conscience can be intensified and strengthened by arousing it through the presentation of the class of ideas to which it responds,—those which have a genuinely *moral* tone. These concepts come, of course, through the judgment; for it must be carefully kept in mind that *conscience has no power of discrimination*, of deciding as to the rightness or wrongness of an act. So in the case of children, whose judgment is undeveloped, the

judging must be done by parents and teachers, and certain things presented to the children as things they *ought* to do, and others as things they ought *not* to do. In this way conscience is quickened, and judgment taught to discriminate. As soon as possible, however, the child's judgment must be appealed to directly: "Do *you think* that is right?" "Do *you believe* that a wise thing to do?" Children respond far more readily, and at an earlier age, to such questions, than most people suppose.

The boy or girl who is taught to use all resources of knowledge and experience in reaching an unbiased decision upon questions of conduct, and instantly to obey the imperative *ought* of conscience, will grow into the self-reliant man or woman of high integrity and moral strength.

# [illegible] XI.

*[illegible] continued.*

[illegible]

[illegible] in the individual in [illegible] us to action upon [illegible]. For instance, the [illegible] to a feeling of anger, [illegible] to the object that [illegible] affection, is manifested [illegible] that has aroused it. [illegible] benevolent or malevolent: [illegible] good or to do evil to those [illegible]

*[illegible] Affections.*

[illegible] and is, as Drummond [illegible] the world," is that affec-[illegible] to do good, to return [illegible] make the Golden Rule [illegible] phases, one of the [illegible] that man is capable of. [illegible] that is the basis of the [illegible] is the basis of society. [illegible] the child first experi-[illegible] awakening and its con-[illegible] to keep his after life [illegible] social unit, and the

influences brought to bear upon the child in the home will very largely determine what he shall be as a member of that organism we call society.

Patriotism.

*Patriotism,* love of country, though a much-praised feeling, and one that ought to be cultivated assiduously in many more ways than it currently is, in its origin, at least, is a selfish affection. It grows out of the love for home and family. The young patriot looks upon his country as a larger family, and feels a danger to it to be a personal danger to himself. But true patriotism is a sublime feeling, whatever its origin; and it is probably better that it has much of the personal element in it, for men and women will readily die for what they feel touches them personally, when they would not draw a blade for a mere abstraction. The best soldiers are not always philosophers, though doubtless the loftiest love of country is due as much to *reason* as to feeling.

But the teaching of patriotism too often takes the form of firing the citizen's ardor for the protection of his country against armed forces, and is by no means often enough directed to arousing a desire to protect the community, state, or nation, against the far more insidious and not less dangerous foes that attack the foundations of good government.

Patriotism is largely a matter of sentiment with every one, but more especially with the child and the youth. The means used to arouse this feeling in them, then, should be such as will excite the sensibilities rather than appeal to the rational faculty. Every schoolhouse in the land, from the humblest log structure to the proudest pile of brick and stone, from the country school to the university, should have a *flag;* and

the pupils should be taught to look up to it, and salute it, and love it with a reverential love. Then there must be singing of patriotic songs, and reading of biographies of patriotic men and women, and stories of heroic deeds. Through these, *sentiment* is aroused; and in the study of civics, now required to be taught in some form in most schools, much is found to call forth the *rational* element in patriotism. Every boy and girl should be given a clear comprehension of the principles upon which American government is founded, and an adequate knowledge of the methods used in applying these principles in practice, and the dangers which beset representative government. Through such inculcation of patriotism, the young citizen will come to see that a vote cast at the people's polls or in legislative halls may have more patriotism or *treason* in it than a shot fired for or against the flag.

Above and beyond the love of country, and perhaps in some sense out of it, there will grow up in the mature man or woman the *love of humanity;* and upon this will be founded, by each one for himself, a system of social ethics.

**Philanthropy.**

Our sense of duty to those who are for any reason handicapped in the race of life; our treatment of those who press upon us the claims of a common humanity; our conduct as individuals whose lives touch the lives of others at numberless points, — all will be determined by the quality and strength of this affection.

*Love* of God, not dreading fear of him, is the basis of any true religion, — any religion that is not fetichism or a species of devil worship. All children begin at a very early age to construct a *theology.* Sadly harmed is any child whose home surroundings or

**Love of God.**

formal education may be such as to cause him to frame his theology upon a concept of God as being other than *love.*

### *Malevolent Affections.*

The malevolent feelings come nearer than any others to disproving the assertion that all the mental activities of normal humanity are worthy of proper education. But it may be shown that these are no exception. They are all in a certain sense protective, and helpful in preserving the individual and the race.

**Anger and Hate.**

*Anger* and *hate* may be called the *acute* and the *chronic* conditions of the same feeling. Anger is sudden, sharp, intense: hatred is anger become chronic. Both, if properly directed, wield a legitimate influence upon character. Both affections should be felt rather for abstractions than for persons,—for evil rather than for the evil doer, for oppression rather than for the oppressor, for wrong rather than for the transgressor. It is perhaps legitimate to feel *anger* against persons sometimes, as well as against their deeds; but to *hate* the sinner as well as the sin is never right. There is such a thing as "righteous wrath." Washington and his compatriots were on fire with it that Christmas night on the Delaware, and at Valley Forge. All history shows that anger at oppression and tyranny has been one of the main incentives in man's many struggles for freedom.

These affections need proper direction in the young. With the intense susceptibility of children to the *personal* element in all their feelings, it is difficult to get them to discriminate as carefully as they should between the person and his offending acts. They should be

taught to hate lying, theft, impurity, and to be angry at cruelty or inhumanity of any kind.

Envy and Jealousy.

*Envy* and *jealousy* are wholly evil, unless they can be turned into emulation and generous rivalry. This fact is alone a sufficient reason for not offering medals, or other prizes of intrinsic value, for work done in school. A prize stimulates each pupil to work for a purely personal end, rather than for the good of the whole school or class, and so fosters personal envy and jealousy rather than emulation and generous pride in the success of a fellow-student. The credit and honor of the class or school should always be held up as something worth far more than a bit of metal which only one person may wear, and which is a constant reminder to the others of their failure.

## The Desires.

The desires can, like the emotions, be classed as *physical*, *intellectual*, and *moral*.

### *Physical Desires.*

The physical nature demands food, exercise, rest, sleep. Owing to an increased knowledge of the laws of hygiene and their relations to mental work, the teacher is much more concerned with the physical desires of his pupils than he formerly was. Although the teacher may not properly exercise any direct supervision over the tables or lunch baskets of his pupils (except in those cities where lunches are served to the pupils under authority of the school boards), yet he may indirectly influence pupils, and through them their parents, in the selection of proper articles of diet, correct methods of cooking, eating, drinking, etc. These

matters are best presented by means of short, pointed talks, given occasionally to the whole school, and made to include also the hygiene of sleep, exercise, breathing, bathing. The teacher can aid directly in proper satisfaction of the desires for exercise, rest, and sleep, by exercising judicious control over the games and sports of the pupils, by properly distributing rest intervals through the day, and by not assigning work in the lower grades to be done at home at the expense of recreation and sleep.

### *Intellectual Desires.*

The *intellectual* desires are the teacher's best helpers in all the work he has to do. The chief of these desires is *curiosity*, the *hunger to know*. Every child, and every grown person too, *loves to know*. Getting knowledge is the natural activity of the mind; and the normal mind enjoys getting knowledge as a colt enjoys exercise, because its nature demands activity.

**Curiosity.**

Then if the student, child or adult, does not like to learn at school, the dislike is due to failure on the part of the teacher in the method of teaching, or failure on the part of some one to properly direct the earlier mental activities of the student along the right lines. The teacher must keep firmly fixed in his own mind that the normal child is hungry for knowledge, and set to work for two things: (1) to find out *what* the child likes to know about, and, if this is not profitable as a subject of study, to make it serve as a means of stimulating desire for the right kind of knowledge; (2) to make all useful knowledge attractive to the intellectual appetite. Even a very hungry child will turn away from spoiled and nauseating food, nor is all wholesome food equally palatable to him.

So a child, though filled with eager curiosity, will refuse uninteresting knowledge, and facts presented in an unattractive way; and though it is not wise to let a child eat only one or two articles of food wholly to the neglect of others, yet there is no reason ordinarily why he should be forced to eat eggs if he prefers steak, or to eat his eggs fried if he prefers them scrambled. So, though a pupil must not be permitted to study a few things to the neglect of others, yet it is not wise to *compel* him to study what is distasteful. Food that is not relished will provoke indigestion, and uninteresting facts will cause a mental dyspepsia. If it is desirable for any reason that the child should eat eggs, they should be prepared so as to tempt his appetite. If it is desirable that a student should give more attention than he does to grammar or arithmetic, these subjects should be made interesting, the teacher must find some way of presenting them that will stimulate the desire of the student to know more. Here again appears the necessity for *varying* the methods of teaching. Variety is a spice which tickles the mental palate, and quickens interest. Pupils grow tired of a monotonous grind of recitation, with no variety of method.

**Value of Curiosity in Teaching.**

The paramount business of the teacher, remembering that every child is interested in something, is to discover what that is, *and to use it as the means of stimulating the pupil's desire for other knowledge*. A student interested in one thing, can, with a little care, be got to see that he cannot know that one thing alone; that in order to know *it*, he must know something else, — many other things, in fact. All children are interested in concrete things; hence, again, the necessity for *object teaching*.

The curiosity of children, too often looked upon by their elders as annoying, is a desire that should be given the most liberal satisfaction by parents and teachers. *Every* question that can be answered to the profit of the child — and most questions can be, if the answers be given simply and honestly — should be answered. If this be done, the child will rest satisfied when told, in regard to such questions as it may not be advisable to answer, that he cannot yet understand those things. The parent who turns away an eagerly questioning child without satisfying him is giving a stone when asked for bread. From the child's standpoint there are no "foolish questions:" he does not know the relative value of facts, but he is trying to find out, and he should be helped. Both at home and in school the practice should be to *satisfy, stimulate*, and *direct* the child's desire to know. Above all, incite him to *find out for himself*. In such way may be developed the beginnings of that insatiable hunger to know which has marked all those at whose imperious demand Nature has yielded her choicest secrets.

**Curiosity should be satisfied.**

Self-love, the desire for *approbation*, is a purely egoistic feeling, and is manifested by the more intelligent lower animals, as the horse and the dog, as well as by man. Dogs and horses court approval, and enjoy it. This feeling is manifested very early and quite markedly in children. They love for themselves, their acts, and their sayings, to be noticed favorably. In older children and in adults the desire for approval has various phases, sometimes appearing in combination with a morbid and painful self-distrust which needs a constant reassurance to alleviate it; some-

**Self-love.**

times manifesting itself as a perverted self-confidence which is deaf to any but favorable comment, or which may even be so well satisfied with self-appreciation as to be indifferent to the favorable opinion of others; sometimes finding expression in its highest and best form, in which there is a legitimate and honorable desire and regard for the good opinion of intelligent people, mingled with a just appreciation of one's own character and worth. That man is in a bad way who cares for no one's good opinion but his own; but he who does not seek to win his own self-approval is in a worse way. If in history there had been no one to hold to his own estimate of himself in the face of the disapproval and even denunciation of others, there would have been no one to stand alone with an opinion or a principle till the world should see, and understand, and move up to him.

**Value of Self-love.**

The child's desire for approval is a powerful directing force upon his character. Until his own power to judge is developed, he must test the moral quality of his acts by the opinion of his elders. What they approve will seem to him right; what they disapprove, wrong. Erroneous judgments of right and wrong that may be formed in this way will often require half a lifetime to eradicate. Consciousness of this fact should compel the utmost care on the part of parents and of all with whom children are associated. A careless act, an indifferent word, a thoughtless smile, may easily be construed by a child as an approval of things that are questionable or wrong. Parents and relatives so often show at least a half approval of such behavior in a very young child as would be visited with quick punishment in an older one. This is, to say the least, confusing to the children's ideas of right and wrong.

In using the self-love of his pupils as a means of character building, the teacher should be careful to point out the classes of persons whose approval is worth having, and *why* it is worth having. He should also with equal care teach his pupils to be honorably self-confident, and not to rely wholly or too much on the good opinion of others. Through love of approbation, the young may be as easily led into evil as into good. *Independence* of character, when founded on informed judgment and an active conscience, is of the highest value.

**Ambition.**

*Ambition* is one of the most potent agencies the teacher can use for securing from his pupils good work and right conduct. This feeling is a desire to excel in *some* way, and, as it is often easily perverted, it is dangerous as well as helpful. The boy may be fired with an ambition to become a noted desperado rather than to be at the head of his class; and the girl may have an ambition to be a society queen rather than to be a model in deportment. The bent of the ambition is determined by the influences exerted by the home, the school, companions, and *books*. Parent and teacher cannot be too watchful of what boys and girls read. An evil book is worse than an evil companion: it can instill its poison quietly and in secret; and to it the boy or girl may turn again and again with inflamed imagination and growing ambition. Those who have the care of the young must be constantly on guard against the profound influences that certain classes of literature wield through their effect upon ambition.

Children cannot have this feeling turned too early to worthy ends. Let each one become ambitious to have

the best school, the best-kept schoolroom, or to excel in promptitude, truthfulness, uprightness, manliness, womanliness. As they grow into youth, put them under the magnetism of the fine and noble in biography, history, and literature. The ambitions thus aroused will mold and shape the whole life to high purposes.

**Imitativeness.** *Imitativeness*, the desire to be or to do as others, is perhaps not a distinct feeling, but a complex, made up of an instinctive sympathy and the desire for approval. Children imitate the actions and language of their companions through an unconscious sympathy which can hardly be called a desire. Later in the mental development, imitativeness becomes the root of ambition. The boy or girl aspires to be like some ideal man or woman, or to do deeds of heroism and beneficence after the manner of some hero or heroine. With right ideals before it, imitativeness makes for character.

**Desire for Society.** *The social feeling*, the desire for the companionship of one's fellows, is used as a means of discipline everywhere, in home and school and state. Isolation is one of the severest forms of punishment, and is so regarded by the toughest criminals; and any one who has seen how utterly miserable a child may be made by the temporary ostracism of his school companions is aware of the strength of the social feeling even in its instinctive form in the very young. To separate the child from his fellows is too severe a disciplinary measure to be used except for extreme reasons.

### *The Moral Desire.*

*Desire for harmony with God* is, beyond question, one of the feelings of the human mind in all races. It

is manifested by the African savage, who tries to propitiate his gods by various kinds of idolatrous worship; and by the civilized Christian, who seeks for unity with God by prayer and righteous living.

**Motives.**

The feelings taken together are called *motives*, because they move us to action. The desires are the strongest motives, often not only soliciting the will to this or that determination, but carrying it by storm, and compelling us to deeds we would not do. The relation of the feelings to will and character is of the most vital concern to the teacher. A somewhat extended discussion of it will be found in Chapter XVII. As to the character and education of the sensibilities themselves, something further may be said here.

There are a great many more forms of feeling to which the mind is subject than have been mentioned in the foregoing pages; and all have many phases, shades, and gradations, and many complex combinations. It is rare that any one feeling becomes so wholly dominant as not to be modified in some way by other less vivid ones.

**Happiness in Alternation of Feelings.**

A striking peculiarity of the feelings is the change that occurs in any of them when too frequently produced, or when too prolonged. The pleasurable ones become painful, and the painful ones lose somewhat of the sharpness of their pain. Joy too long sustained becomes discontent; and it is true that to be happy we must occasionally know sorrow. The mind becomes deadened to prolonged fear or remorse; and ceaseless pleasure would be unbearable. The greatest sum of happiness

is secured from the constant balancing and alternations of the feelings, from their flow and counterflow,—the mingling of hope and fear, of anxiety and content, of shame and pride, the satisfaction and reawakening of desire. In literature and the drama both good and evil are portrayed—love and hate, pity and cruelty, the pathetic and the ludicrous—in concordant alternation.

**Higher Animals have Feelings.**

With the exception of the more generalized social feelings, as philanthropy and patriotism, and perhaps of the *ethical* feelings, the higher animals are susceptible of the same emotions, affections, and desires as man is himself. Lubbock's study of ants seems to have proved the existence of the social feelings among them; and many of the higher animals exhibit what in man would certainly be called *conscience*.

The first manifestations of feeling are shown in the simple states of physical pain and pleasure; then, in the human, appear joy, sorrow, fear, love. Many of the higher feelings, though innate, are not aroused except through rather complex acts of the judgment, in forming abstract concepts of duty, goodness, power, etc.

**Education of Feelings.**

The method of educating the feelings may be briefly stated. Objects, ideas, and *ideals* must be presented worthy to excite the human emotions, affections, and desires in their highest and purest forms, until correct tastes and ethical standards are formed. Some suggestions as to how this may be done have been offered in the preceding discussion of the various feelings; but it is desired here again to emphasize the benefits derived from nature study and the reading of the best literature.

The teacher must not try to hold his pupils continuously to too high an emotional strain, and must not play upon any one feeling or set of feelings too exclusively or too long, in attempting to repress evil or incite to right action.

# CHAPTER XII.

## THE WILL.

THROUGH consciousness I know that *self* exists, and is the same self in essence all the time. Self says "I am." Through judgment I come to know good and evil, right and wrong. Through conscience I feel obligation, the imperative moral *must*. Self through conscience says "I ought." But other feelings than conscience make their appeal. The affections and desires may all urge to action contrary to the decision of judgment, and opposed to the persistent promptings of conscience. All other motives may be arrayed against conscience. During this conflict, self is aware of the power to say "I can and will do this," or "I refuse to do that." This power is the crowning, dominant faculty of mind: it is *will*.

Materialists and fatalists have tried not only to explain it, but to *explain it away;* but it is as much a fact as matter or any of the attributes of matter. Matter and its attributes become known to us only through the impressions they make on consciousness by means of the sense organs. Our knowledge of matter, then, depends on consciousness, and so does our knowledge of everything else. It is impossible to discriminate between the contents of the normal consciousness, and say this is trustworthy knowledge and that is not; therefore will can no more be denied than matter.

Will is correctly defined as *the power to determine and execute.* Will has the power to determine upon one, or to reject all, of a number of alternatives. It can direct the execution of a determination as soon as it is formed, or it can postpone execution for any length of time.

**Will defined.**

It is also the faculty of *expression,* but may be used to prevent expression by inhibiting speech or action. The bodily organs of will are the muscles: through them all expression takes place. This statement is easily tested and proved. Anything that is done or said must be done through muscular contraction: we smile, laugh, cry, talk, gesticulate, write, *with muscles.*

But although will is the faculty of expression, and muscles are its end organs, yet it has other work to do, in which any one or all of the other powers of the mind become its servants. As a train of associated ideas passes through consciousness, will can choose one, and direct judgment to its consideration, can cause imagination to picture possible combinations of this idea with others, and can compel memory to recollect other similar ideas. We can, while sitting still, without a movement of any voluntary muscle, hold the mind to the consideration of two or more possible activities, and *determine* to follow one of them to-morrow or next year. It is only at the time of *executing* the determination that will is expressed in muscular movement. Will may turn the mind from one line of thought upon another, or it may even inhibit thinking altogether; and all this wholly without muscular movement.

**All Faculties the Servants of Will.**

Professor James would include the acts of will — determining and executing — in the one function of

*attending*. He says, "The essential achievement of will is *to attend* to a difficult object, and hold it fast before the mind;" and again, "Effort of attention is thus the essential phenomenon of will." A legitimate inference from these statements would seem to be that the business of will ends in setting and holding some object of thought or action in the focus of consciousness. But there is unquestionably in willing the further act of *executing* a choice, of directing thought or action upon the object chosen.

**Expression of Will.**

The only direct physical result of an act of will is either the movement of a muscle or muscles, or the inhibition of movement. Will can be expressed either in action or in suppression of action: I can will my arm to move, or to stop moving. But by no means all muscular actions are due to volition: many of them are reflex or automatic, and can neither be caused nor prevented by an act of will. We cannot directly affect the muscular action of the heart or the stomach by volition. All muscular action is not caused by will; but every outward expression of will is through action, or inhibition of it.

**Development of Will.**

Will, like other mental powers, must be developed. The new-born child has the *possibility* of will, but no will; just as he has the possibility of memory, but no memory. It seems to be shown by the observations of Preyer and others, that will is developed through impulsive and reflex movements of the muscles. For about the first three months of his existence, the child's movements are either impulsive or reflex. Impulsive movements may be due to some nervous disturbance arising in the nerve substance within the body, or they may be caused by the irrita-

tion of some of the nutritive organs. Reflex actions are due to some stimulus — sound, light, touch, etc. — affecting the outer end organs, which, being carried into some ganglionic center, stimulates an efferent (motor) nerve, and so produces movements of the muscles. An infant will frown when the light is too strong upon its eyes, or will draw up the leg and work the toes when its foot is tickled. These are reflex actions. A child less than three months old will hold a pencil or spoon if it is placed in his hand, the fingers closing over the object reflexively; but he cannot reach for or grasp the object of his own volition, or carry it to his mouth. In the fourth month the child can grasp the object or let it go, as he chooses, and can carry it to his mouth by a movement which seems to be partly instinctive, partly volitional. From observations upon such movements of very young children, it has been concluded that the power *to will* is quickened into active existence by *memories of impulsive or reflex actions.* The child subconsciously remembers some movement of the arm, for instance, and a desire is felt to repeat it. Efforts are made to do so, which at last succeed, and thus *volition* is established.

**Impulsive and Reflex Actions become Volitional.**

One school of psychologists would have us believe that there is no such thing as *will;* that all movements even in the adult, are due to reflex action or to the direct influence of *motor ideas:* that is, when we think of some movement it is desirable to make, the idea stimulates the appropriate motor nerves, and these, discharging into the requisite muscles, cause them to contract. This theory "short-circuits" the current of action, as an electrician might

**Materialism rejects Will.**

say, and cuts out will altogether. The eye is stimulated too much by a strong light; the painful impulse flows into consciousness, and starts an idea of lowering the window blind; this *idea* starts the molecules to vibrating in the motor nerves running to the arm and hand, and by the contraction thus caused in the proper muscles the blind is lowered. This fairly illustrates the materialistic explanation of will action.

**Motives cannot be weighed or measured.**

Ward says, "There is really nothing in the will except the simple fact that one of the desires prevails over the other, and the action is performed at the behest of the prevailing impulse or desire." Ziehen, Spencer, and others of the "no-will" school, take more words to say the same thing. But according to their own principles, a science is not exact until its quantities can be *weighed* or *measured;* yet not one of them has frankly faced the fact that their theory of will (or no-will) is as worthless as any other until the "prevailing impulse or desire" or motor idea can be shown to be bigger, or heavier, or to have a more strenuous push or pull, than any other or all others felt at the time. Until they have constructed a balance which will show that a given quantity of conscience is actually heavier than all the desires put together, until they have contrived a *motivometer* which will show that charity is more dynamic than all the other feelings acting together, they should not ask an acceptance of their hypothesis. It is not the business of true science to deny what it cannot explain. And, after all, it is no more difficult to accept will than to explain why an *idea*, which is in no sense a material thing, can cause a nerve to vibrate and a muscle to contract.

But the influence of the desires or other feelings upon volition is very marked and important; so much so, that it may be safely said that the normal will does not choose except upon the solicitation of some motive. But it is no whit less true, for that, that the will can choose which motive shall prevail, or can even refuse to choose or to order any action at all in a given case. It can put all the motives aside, no matter how clamorous and insistent they may be, and decline to do anything. To admit any other view of will is to relieve man of all responsibility; to make him an automaton wound up by some inexplicable process, and set going by "pressing a button." The murderer is simply the victim of his "motor ideas," and it would be as silly to hang him as to hang a steam boiler for exploding and killing some one. The thief is a mere machine, run by the force of the "prevailing desire," and is no more responsible to God or man than the wind that robs a man of his hat. Rather dangerous doctrine that, but it is all in the "no-will" theory of man's actions.

**Will may be diseased.**

There are, however, cases of diseased will, in which the individual can choose, but cannot determine or execute his choice. One man could not take a glass of water after the servant had brought it at his command; another found great difficulty in forcing himself to cross a street, and it was impossible for him to pass a vacant lot; another, after having written a legal document, could not complete the signature. These persons were sane in body (suffering from no paralysis) and sane in mind, with the exception that, in spite of the strongest desire to do, the will could not bid the muscles to contract. Every one recognizes such cases of "no-will" as abnormal. With

them the "motor idea" moves nothing, the "prevailing desire" does not prevail.

Sense impressions and desires are the *occasion* of willing, but they do not *cause* the will to act; much less do they take the place of will. The rather may it be said that *the will is all there is* in human action: as a man wills, so is he.

To be conscious of no *self-power* to direct thought and control action, would weaken every effort toward righteousness, would check every moral impulse, and reduce man below the level of the brute; for the brute could not consciously share in the degradation of acting always as a mere machine.

# CHAPTER XIII.

## OPERATIONS OF THE MIND: ACQUISITION.

THE preceding pages have presented some discussion of the powers or faculties of the mind, and have offered some suggestions as to how these may be developed and trained. It is proposed to investigate now the *operations* of these faculties, working singly or in groups.

There are three general operations of the normally active mind. These have been referred to before (Chapter IV.), and are *acquisition*, *assimilation*, *reproduction*. They may be broadly defined as follows:—

**Definitions.**

*Acquisition* is the operation of gaining and storing facts, ideas, words, so that memory shall retain and recall them. It is the process of taking in mental food. But as, in the bodily economy, food is of value only when it is properly digested and assimilated, so, in the mental economy, no fact or bit of knowledge is of value unless it is correlated with other facts, and interpreted by things already known. Facts are valueless unless comprehended in their relations to the known. They must be assimilated (made like) to the body of our knowledge and thought already formed in consciousness. To *assimilate* is to *understand*.

As bodily health and activity are measured by what the body can do, by the labor it is capable of performing, by the strength it derives from assimilated food, so must the mind be tested by the amount of work it

does, by the new thought created, and by the expression of thought in *language*, *action*, and *character*. Hence *reproduction*, as here used, means *the creation and expression of thought*.

Acquisition involves the activity of the perceptives, of judgment, and of memory.

All the senses are acquisitive, whether working separately or together. Observation is often used to name the acquisitive function of the senses. The two terms *acquisition* and *observation* are nearly synonymous as applied to the work of the senses, but have this difference: *observation* refers more to the outward act, is an *objective* term; while *acquisition* refers more to the inward act, and is the *subjective* term.

The processes of acquisition are *perception*, *conception*, *retention*.

PERCEPTION.

*Perception is the process of gaining primary ideas through the senses and the intuition.* The products of perception are called *percepts*.

**Perception defined.**

The word *perception* means, etymologically, "taking through." A percept, then, is something "taken through" the organs of sense. Each sense gives its own peculiar percept, and all the senses acting together give a combined sense percept. If all the senses are engaged in carrying impressions of the object of sense to the mind, the result may be called a *complete* percept. To illustrate, here is a bell: as we examine it, the eye gives the percept of color; the ear, of sound; the tongue, of metallic taste; the skin, of smoothness or roughness, and temperature; the muscles, of hardness, shape, and size. When these several percepts are combined in consciousness, the result is a

complete percept of the bell as a whole. The separate percepts of red color, sweet taste, sweet odor, round shape, small size, etc., when combined, give us the percept of an apple. In like manner are formed all complete sense percepts. The union of sense percepts is instantaneous in the case of any familiar object, but requires a noticeable interval of time in the case of new objects.

As was previously shown, the eye has acquired the secondary power of determining size, shape, and even distance and weight, so that usually only the eye is brought into use to give us percepts of objects.

**Successive Steps in Perception.**

The exact succession of events in the formation of a percept may be recorded, but *how* these events are caused is a different matter. The process of, for instance, visual perception, may be given as follows: Some object, luminous either by its own or reflected light, emits light-rays, which, by purely mechanical processes, pass through the pupil of the eye, and are focused on the retina so as to form an inverted image of the object. The vibrations of light falling upon the retina set up within it molecular disturbances (photo-chemical, according to Ladd), which in turn occasion a series of molecular movements in the optic nerves. These movements are carried in to the brain, and are perhaps transmitted to the outer layer of the cerebrum. Here they cease to be nerve movements, and *become a visual percept.* Up to the image upon the retina, vision is a purely mechanical process, and may be so far performed by a good camera rather better than by the average human eye.

Of the cause and method of nerve excitation, or molecular disturbance in retina, optic nerve, and brain,

we can know a little; but of the way in which these molecular vibrations in the nerve matter are transformed into, or produce, mental states, we know absolutely nothing. We can go with the nerve vibration up to the point where it ceases to be a *nerve tremor*, but between that point and where it becomes a mental image there is a "great gulf fixed" which no human science or philosophy has yet bridged.

**The Essential Element in Perception.**

To have a percept, then, there must be an excitant,—light-vibration, sound-vibration, or some form of contact with a sense organ of the body; a vibration or series of vibrations set up in the proper afferent nerves; a transformation of this molecular nerve disturbance, at some point in the brain, into a mental state, a something in consciousness called a *sensation;* and finally this sensation *must be referred by consciousness to the external excitant as its cause.* Without this last step there is no true perception. If it were not for this act of consciousness in referring the sensation to some external object as its cause, the mind would never be aware of an existence external to itself. At what point in its development the mind begins to refer sensation to an external excitant as cause, it is impossible accurately to say.

**Perception used in Different Senses.**

It should be noted that the terminology of descriptive psychology is still somewhat confused, not being clearly differentiated from terms used in popular speech. Hence it is well to remember that *perceive*, *perception*, and *percept* are sometimes used with meanings more extended than those given in the preceding pages. We say of intuition (judgment) that it perceives the ideas of space, time, being, etc.; and that it also perceives other truths,

relations, and meanings,—as when we speak of perceiving the drift of one's remarks, of perceiving the thought in a sermon, a lecture, a book. The terms are thus used almost synonymously with *conceiving*, *conception*, *concept*. But these different applications are not so conflictive as they seem, if we bear in mind that in each instance where intuition is said to *perceive*, it acts as a *presentative* faculty, giving a truth or a real relation directly to consciousness.

Percepts, whether gained through the senses or through intuition, are the *elements* of knowledge. Sights, sounds, shapes, temperatures, tastes, odors, and other percepts of physical sense; axioms, and such necessary truths as being, time, space, cause and effect, and other percepts of intuition,—make up, in their various combinations, all knowledge. Percepts are stored in memory, and from this accumulated store we draw as we need. Out of percepts we build concepts, as shown below; but percepts themselves give us many of our keenest pleasures and purest delights, as in the colors of a sunset sky or an October forest, or in the blending of musical tones.

**Percepts the Elements of Knowledge.**

## CONCEPTION.

The next process of acquisition is *conception*, which may be defined as *the act of acquiring general ideas by the combination of percepts or other concepts, or of percepts and concepts*. The products of conception are *concepts* (general notions). The steps in the formation of a concept are *comparison*, *abstraction*, *identification* (*or classification*), *denomination*, *definition*. The faculty by which conception is effected is *judgment*.

**Conception defined.**

By observation — that is, by exercising the senses — we gain more or less complete percepts of a number of objects. These objects, or the percepts of them, we *compare;* that is, note their resemblances. The common properties or attributes we *abstract*, or draw away from the others. These abstracted common qualities are put into a group or "bundle" by themselves (*identification*); and this group becomes the type of all objects possessing these qualities in common, and is named (*denomination*) with a class name. Finally, we *define* when we are asked to make plain to others what our concept is, or when we would be sure of a clear notion in our own consciousness. To illustrate: we see from time to time several objects, — some square, some round, some tall, some low, some handsomely finished, others roughly so, — but all are alike in being made of metal and in having a cavity inside to hold fire. These common characteristics we abstract, group together, and *denominate* (or name) the result "stove." Before the word *stove* could call up the corresponding concept in the mind of one who had never seen a stove, it would have to be *defined* in intelligible terms.

A percept is the immediate result of the mind's reception of impressions through the senses: a concept is the result of an act or acts of judgment (the relational faculty) in discerning resemblances, and grouping like objects together under a general idea.

**Concrete Concepts.**

This general description and illustration of the formation of a concept applies more particularly to *concrete* concepts, — concepts of concrete things. It typifies fairly well the general process of conception. But only our concepts of material objects are formed out of sense percepts; and our most useful con-

cepts of even material things contain elements that the senses alone cannot directly furnish, but which must be gained through judgment, and quite often through feeling. Most of our concepts are complexes of sense percepts, other concepts, and feelings.

We can trace step by step the formation of only the simplest ideas, as the concept *dog* or *man*. It is difficult to distinguish all the elements that enter into our concept of *religion*, or *society*, or *evolution;* or to follow in detail the synthesis by which the elements were put together to make the concept. It is safe to assert, that in every act of conception there are, broadly speaking, all the stages given on the preceding page, the most important ones being *comparison* and *identification*, or the search for and recognition of similarities.

**Discrimination.**

But we are able to make a concept clearer and to get a firmer grasp of it by *discrimination*, — the discernment of difference between percepts or concepts. The first impulse of the mind is to seek for and perceive resemblances: the perception of differences is secondary, and seems to be at first a negative act, a perception of *lack of resemblance*. The ability to discriminate is an element of the highest value in *skill*. Skillful physical or mental work requires quick recognition of slight differences and discrepancies.

**Abstract Concepts.**

Abstract concepts — concepts of goodness, beauty, color, etc. — are formed by abstracting these qualities not only from other qualities of the objects, but from the objects themselves, and are evidently made up of but one quality instead of several. But to form a concept from this one quality, we must have seen it manifested in different objects and in various ways. We must have seen various manifes-

[illegible] more general [illegible] process of generalization [illegible] phenomena will [illegible]

[illegible] concepts [illegible] similar properties [illegible] many [illegible] By some [illegible] was classed [illegible]

As the human mind grows in logical power, it seeks more and more closely for real and distinctive resemblances and differences. The most important determining resemblance upon which we most often classify objects is resemblance in function. The classifications of the systematic natural sciences—botany, zoology and their subdivisions—are built upon functional resemblances. Only the simplest and most primary concepts are based on or derived from the more external accidents of color, sound, weight, etc.

*Most Important Resemblance*

It has been claimed that a concept must be made up of two or more percepts; that a concept—a notion of a class of objects having common properties or functions—cannot be gained from one percept. This is doubtless true to some extent of the child mind or the undisciplined mind, which must perceive many objects before their common attributes will be perceived as com-

*A Concept may be gained from One Percept.*

mon, grouped together in consciousness, and named. But the mind trained in even a slight degree can undoubtedly gain a concept of a wholly new class of objects from the careful observation of *one* of the objects. Here are the extremes: some of the African low tribes, not having power to arrange their individual percepts into general groups, have no class names for objects,—no such names as *tree*, or *cattle*, or *persons*. But a cultivated intelligence can grasp the general idea of, for instance, *skates*, from seeing one pair of skates, or could even pass through the idea of *drunkard* to the abstract concept of *drunkenness* from seeing for the first time one drunken man.

**Individual Concepts.**

There is a class of ideas that may be called *individual* concepts, as the concept of a particular person or thing. Such concepts are made up of the attributes or peculiar characteristics of an individual. Certain attributes enter into my concept of my friend Henry Brown, or my dog Jack. These are the attributes by which I distinguish these individuals from others of the same class.

**Apperception.**

A concept having been once formed, all objects observed to have the properties from which the concept is made up are immediately classed with the concept already formed. Thus, if I have the concept *fern*, all new objects having the attributes entering into my concept are classed as ferns.

If any new thing be perceived, the mind at once tries to assimilate it (make it similar) to some concept already acquired. It is said the natives of one of the South Sea Islands, who were familiar with sheep but had never seen a hog, called the first porker brought to their shores a "grunting sheep." The concept *sheep* was the

one which the percept of the hog most nearly resembled. This spontaneous act of the mind in immediately seeking something in its store of ideas with which to classify a new idea, is sometimes called *apperception*, the translation and interpretation of the new in terms of the known. It is one of the first distinctive steps in the elaborative operation to be described as *assimilation*.

Apperception is therefore an elementary *classification*, the grouping of concepts. The term *classification* is used in two senses. In one it means the act of *identification* in the process of forming concepts; that is, the act of recognizing resemblances, and grouping them together in consciousness. In the other sense it is used to name the process of grouping concepts; that is, putting into the same class objects that have essential points of agreement. For example, we classify minerals, plants, and animals in the several sciences treating of them. For the sake of precision, it is better to use *classification* in this latter sense, and to use *identification* to express the recognition of resemblances in forming concepts.

**Thought without Words.**

It may be worth while to say here, that there hardly seems to be sufficient ground for the assertion sometimes made, that there cannot be *thinking* without language. It should be plain that there can be; for every one has concepts for which he has no names, and can carry on a line of thought that cannot be successfully put into language. Every child thinks for some months before he masters even a few words, and the deaf-mute is sometimes quite advanced in rational thought before he has possessed himself of any rational language. It would be valuable to know in what way Laura Bridgman formed her con-

cepts, and in what terms or symbols she carried on a line of thought. We must conclude, of course, that she thought wholly in *tactile* images; and yet *how* she could do this must remain a mystery to us who possess all the senses.

**Definition.**

*Definition*, which has been given as the last step in conception, is not, strictly speaking, a process in the formation of a concept; but a concept is not clearly fixed, not wholly possessed, until it can be accurately defined.

Schuyler defines a definition as "such a description of a thing, whether an object or a class, as will distinguish it from all other things." A correct, concise definition — one that *excludes* all that does not fall within its meaning, and *includes* all that does — is a delight to the logical soul. It is to a concept what minting is to precious metal: it strikes into clear and accurate form and shape the raw bullion of our concepts, and gives them currency in our communication with others.

A complete definition is a sentence composed of subject, copula, and attribute.

**Parts of a Definition.**

The attribute of such a sentence is made up of two parts — the *proximate major genus* (nearest greater family) and the *differentia* (specific difference). The following illustrations will make these technicalities plain:—

1. *A polygon is a* $\overbrace{\textit{plane surface}}^{\textit{prox. major genus.}}$ $\overbrace{\textit{bounded by straight lines.}}^{\textit{differentia.}}$

2. *A triangle is a* $\overbrace{\textit{polygon}}^{\textit{p. m. g.}}$ $\overbrace{\textit{having three sides.}}^{\textit{differentia.}}$

3. *A square is an* $\overbrace{\textit{equilateral}}^{\textit{differentia.}}$ $\overbrace{\textit{rectangle.}}^{\textit{p. m. g.}}$

To say that a polygon is a plane surface is not sufficient, because there are plane surfaces that are not polygons; hence polygon has to be differentiated from other plane surfaces by specifying its straight-line boundary.

It is not exact to define a triangle as a polygon, for there are many polygons that are not triangles: the definition is completed by adding the differentia, *having three sides*.

To say that a square is a polygon, though true, would not be a definition, since the term *polygon* includes other plane figures besides the square; that is, polygon is not the *nearest greater family* containing squares.

It is both very easy and very necessary to make accurate definitions of mathematical terms, but it is by no means so easy to make good definitions of terms in everyday use. It is impossible to give perfect, logical definitions to some terms; for words are natural growths, and are not always subject to logical rules.

Some further illustrations of definitions are added:

*4. A diamond is the hardest gem.*

*5. Air is a gas composed of one fifth oxygen and four fifths nitrogen.*

*6. A hat is a head covering with a brim.*

*7. Life is a force that manifests itself through growth from within.*

From these examples it will be seen that there are different kinds of specific differences, and different ways of placing them as modifiers of the proximate major genus. In each case the *differentia* is an adjective element in the sentence, and may be placed before or after the proximate major genus, and may be a word, a phrase, or a clause. It may, as in 1, 2, and 3, describe

a mathematical property; or, as in 4 and 5, a structural characteristic; or, as in 6, a mechanical part; or as in 7, a function.

It should be noted, that, in the language of Schuyler, "the subject and predicate of a definition are coextensive and interchangeable." A definition, like an algebraic equation, should read correctly either way.

The teacher will find it a most profitable exercise, both for himself and his older pupils, to have occasionally a thorough drill in defining common terms, such as *chair*, *table*, *mouth*, *door*. It is an excellent plan, also, to test the definitions met with in study or reading. Even a cursory examination will show that many popular text-books are woefully deficient in both the number and accuracy of their definitions of terms used. The student has to flounder through a mass of names, many of them technical or used technically, without gaining clear-cut and accurate ideas of the subject. Hence too many school-bred men and women are loose thinkers, and are inexact in expression.

**Denotation and Connotation.**

A term *denotes* (names) all the objects of a class: it *connotes* attributes or characteristic qualities of the objects in a class. For example, the term *dog* *denotes* (names) all animals of that class,— they are all called dogs; it *connotes* the attributes or marks that distinguish dogs from other animals. *Denotation* refers merely to the name: *connotation* refers to the characteristics marking the object, which are included in the definition. The denotation of a term is usually pretty clear, especially if the term is a familiar one; but its connotation is not always clear, even when the term is one in everyday use. We all know, for instance, the object named by the term *chair;*

but an attempt at an accurate definition of chair will soon convince the experimenter that he is not so sure of its *connotation;* that is, he may not have clearly in mind the qualities that must be named to differentiate chair from every other kind of seat.

**Importance of Definition.** No argument should ever be undertaken, no demonstration attempted, without a preliminary *defining* of all important terms entering into the proposition, and an agreement as to their connotation. Many words and much temper could be saved by such precautions. Frequently, at the close of a heated argument, the disputants find they have been talking about very different things under the same name, and that, if they had carefully defined their terms at the outset, they would have found themselves in agreement from the first.

In using definitions in teaching, it should not be forgotten that a definition is valuable only as the pupil has the corresponding concept, or at least its essential uncombined elements, already in consciousness. He can understand a definition only as he already knows *the thing* defined. The memorized words of a definition often convey no meaning to the pupil. A good working principle for the teacher is, therefore, not to give a formal definition to the child, or require him to give one, until the child *knows the thing*,— has formed the concept. In the case of older pupils the definition may sometimes be given first, and the corresponding concept will be suggested by the words of the definition, if they are sufficiently familiar.

**Properties of Concepts.** Concepts have the properties of *clearness*, *distinctness*, *extension*, and *comprehension* (or intension).

A concept is *clear* when it is discriminated in consciousness from other concepts. We have a clear concept of *horse* when we can properly and readily discriminate between a horse and all other objects.

A concept is *distinct* when the attributes that go to make it up are plainly comprehended. When we know all the essential attributes that mark a horse, and have them grouped together in consciousness, we have a *distinct* concept of *horse.* The ability to give class differences, as the difference between horses and dogs, is a test of *clearness:* the ability to accurately define, that is, to give the marks or attributes that make up a concept, is a test of *distinctness.*

By the *extension* of a concept is meant the number of different objects denoted or named under it.

By *comprehension* (intension) is meant the number of attributes or qualities connoted under the concept. For example, the *extension* of the concept *man* means all the different races and kinds of men: the *comprehension* of the concept means the qualities that distinguish man from other objects. Extension and comprehension vary *inversely:* the greater the extension of a term, the fewer the attributes or qualities comprehended under it. The term *animal* is more extensive than the term *man*, because it includes man and all other animals: it is less comprehensive, because we need to name fewer attributes in order to define *animal* than we do to define *man.*

The most *extensive* concept is *being*, since that includes all existing things: the most *intensive* concept is that of some individual object, as *John Smith.* We need name but one attribute to define *being:* we must name very many to discriminate *John Smith* from the

multitude of his fellows. The terms *man*, *animal*, *student*, *lawyer*, may be arranged in the order of their extension thus: —

Animal.
Man.
Student.
Lawyer.

The term *animal* includes (extends over) all below it. More attributes have to be named to define *lawyer* than to define *animal*. *Lawyer*, therefore, has the greater comprehension; *animal*, the greater extension.

The relations of concepts in extension and comprehension will be further discussed under the following subject.

*Outlining.*

*Outlining* is to a *series* of related concepts what defining is to the *single* concept: it serves to fix their order and comparative importance in mind, and to make clear their mutual relations. As a definition shows the essential marks or attributes of a concept, so an outline shows the order and relation of the objects forming a class, or the sequence and connection of thoughts in a subject.

**Outlining defined.** Outlining is the process of arranging a series of concepts in logical order, upon some principle (one or more) of mutual relation.

An outline of a concept or series of concepts in extension is called *division:* an outline of a concept with reference to the parts of the object is called *partition.* To illustrate: to outline *man* in extension would be to divide mankind into the different races and kinds of men; to outline *man* in partition would be to give the *parts* of a man (as head, trunk, and extremities), and

to separate each of these into its parts. The one rule to be carefully observed in making an outline is, *the basis of division or partition in any portion of the outline must be plainly set forth and faithfully followed.* It would be manifestly illogical to divide man into Negroes, Indians, club-footed, bachelors, and Chinese; or to partition man into head, trunk, lime, nerves, and extremities. But if there be several different bases of separation, all these items, and many others, will fall logically into place. Thus man may be divided (classified), upon the basis of *religious faith,* into Buddhists, Mohammedans, Christians, etc.; upon the basis of *color,* into the yellow, the brown, the black, the white races; upon the basis of *occupation,* into farmers, lawyers, carpenters, etc. Man may be partitioned, upon the basis of *mechanical parts,* into head, trunk, extremities; upon the basis of *chemical composition,* into lime, water, salt, etc.; upon the basis of *function,* into the motive system, the nutritive system, the sensitive system.

An outline of a *subject* for an essay, lecture, debate, etc., may include more than division and partition; for example, in an outline of *horse* as the subject of an essay or book, could be included not only the kinds of horses and the anatomical parts of a horse, but also the origin, history, uses, diseases, training, etc., of horses.

**Use and Value of Outlining.**

It is necessary for the scientist, the public speaker, the essayist, especially for the *teacher,* and in short for every one who would have *mind* direct his work economically, to outline clearly the matter in hand. The elaborate classifications of the botanist and the zoölogist; the arrangement of the heads and subheads of a sermon, a political speech, a lecture, or a *recitation;* the grouping of the topics and

paragraphs in a newspaper or magazine article; the planning of a day's work on the farm or in the kitchen, —are all simply outlines, the orderly arrangement of concepts according to their relations and logical sequence.

No proof is needed to make plain the fact that outlining aids memory, and is a great saver of time, of thought energy, and of vital force. It gives lucidity and connectedness to lectures, to essays, to narrations. to scientific treatises, and to works of fiction. It enables the teacher to group and concisely present the facts of a lesson, and to make each question hit the mark. It enables the farmer, the blacksmith, the carpenter, the housekeeper, to take the fewest steps, to make the fewest strokes, to accomplish the most with the least effort. Outlining means, in everyday affairs, clearly thinking out beforehand *what* is to be said and done, and *how* it is to be said and done. To go to work at anything without a plan (an outline) is to incur loss of time and energy, if not failure.

There is no better school exercise with which to cultivate judgment, as well as the power of observation and memory. The younger pupils may be exercised in outlining, both in extension and comprehension, the concepts of *chair*, *table*, *house*, *tree*, *flower*, etc.; and the older ones will find great profit, and so will their teachers, in outlining both orally and in writing the doings of a week or day at home or at school, the sermon or lecture they have heard, the books and papers they have read.

The degree of ability to outline affords a very just test of the power to think; and by the application of this test, many a talker and writer will be found to be

a mere word machine, and many a teacher or farmer or merchant be proved to be a clumsy, blundering doer of what has not been clearly thought out beforehand.

One of the chief values of outlining to the teacher is that it frees him from his bondage to the text-book. The teacher who goes before a class with a clear outline in mind, not only of the *lesson matter* but of *how* he shall present it, will not need a text-book with which to "hear the lesson." Almost every study in the common school course may be outlined profitably; but history and civics, physiology, grammar, and arithmetic, are especially adapted to being taught by outline and topic methods. The pupils should also be carefully drilled in outlining the subjects of their compositions, before writing.

**Methods of expressing an Outline.**

An outline may be mechanically expressed in various ways. Many systems have been used, the most convenient of which are the brace system and the numeral (or numeral and literal combined) systems. A few simple examples will suffice to show how these systems are used. An outline of *trees* would take the following form in the brace system:—

$$\textit{Trees.}\left\{\begin{array}{ll}
\text{Kinds.} & \left\{\begin{array}{ll}
\text{Oak.} & \left\{\begin{array}{l}\text{White.}\\ \text{Red.}\\ \text{Black, etc.}\end{array}\right.\\
\text{Maple.} & \\
\text{Walnut, etc.} &
\end{array}\right.\\
\\
\text{Parts.} & \left\{\begin{array}{l}\text{Root.}\\ \text{Trunk.}\\ \text{Branches, etc.}\end{array}\right.\\
\\
\text{Uses.} & \left\{\begin{array}{l}\text{To give shade.}\\ \text{To yield wood.}\\ \text{To prevent drought, etc.}\end{array}\right.
\end{array}\right.$$

The same outline in one of the commonest numeral systems would take this form:—

*Trees.*

I. Kinds.
  1. Oak.
    (1) White.
    (2) Red.
    (3) Black.
  2. Maple.
  3. Walnut.

II. Parts.
  1. Root.
  2. Trunk.
  3. Branches.

III. Uses.
  1. To give shade.
  2. To yield wood.
  3. To prevent drought.

For *brief* outlines either is good. The brace system is especially serviceable in diagrammatic work, when relations of concepts are to be *pictured.* The objections to the brace system are, that it requires too much room, and it cannot be read aloud so that a listener may follow the relations expressed. The latter objection disqualifies it for ready and general use in class work. The objection to the numeral system shown above is, it cannot readily be carried into many subdivisions.

Long use has shown that a form of the numeral system called the *exponential* is the most serviceable for all purposes, whether in the schoolroom or elsewhere. The outline shown above would be expressed by the exponential system thus:—

*Trees.*

$1^1$ Kinds.
  $1^2$ Oak.
    $1^3$ White.
    $2^3$ Red.
    $3^3$ Black.
  $2^2$ Maple.
  $3^2$ Walnut.
$2^1$ Parts.
  $1^2$ Roots.
  $2^2$ Trunk.
  $3^2$ Branches.
$3^1$ Uses.
  $1^2$ To give shade.
  $2^2$ To yield wood.
  $3^2$ To prevent drought.

A glance will show that the relation of concepts is shown in this system in two ways, — by an exponential figure and by position. The numeral expressions $1^2$, $2^2$, etc., are called *indices:* the small figures are the *exponents*, and the large figures are *numerals.* The exponents show the degree of division or partition, and mark the coördination and subordination of concepts; and the numerals merely number the items. The *exponent*, therefore, is the important figure.

This system of outlining was invented by Dr. Alfred Holbrook of Ohio. Dr. John B. Minor of Virginia also worked out the same system independently, except that letters are used as exponents; and his well-known treatise on law is outlined throughout by it. The illustration given above would appear in his letter-exponent system as shown at the top of the next page.

*Trees.*

$1^a$ Kinds.
  $1^b$ Oak.
    $1^c$ White.
    $2^c$ Red.
    $3^c$ Black.
  $2^b$ Maple.
  $3^b$ Walnut.
$2^a$ Parts.
  $1^b$ Roots.
  $2^b$ Trunk.
  $3^b$ Branches.
$3^a$ Uses.
  $1^b$ To give shade.
  $2^b$ To yield wood.
  $3^b$ To prevent drought.

The exponential system has come into very general use in schools whose teaching is by subjects rather than by text-books.

For the help of those who may be unfamiliar with this very valuable mechanical aid to orderly thought and logical memory, the following rules are appended:—

(1) *All indices having the same exponent are written in the same vertical column.* A notebook or paper ruled both ways is a great aid to neat work.

(2) *At each subdivision of the subject, the exponent is increased by one, and the index is written below and a little to the right of the beginning of the line above.*

(3) *Nothing should be written to the left of the index.*

The application of these simple rules will be seen in the examples of outlines here given. A few other illustrations showing the use of outlines as topic lists in common school subjects are given here.

### *Grammar.*

- $1^1$ Diagraming.
  - $1^2$ Value of.
  - $2^2$ Systems of.
    - $1^3$ Curved line.
    - $2^3$ Straight line.
    - $3^3$ Eclectic.
  - $3^2$ Models of.
- $2^1$ Analysis.
  - $1^2$ Value of.
  - $2^2$ Order of.
  - $3^2$ Models of.
- $3^1$ Parsing.
  - $1^2$ The Noun.
  - $2^2$ The Verb.
  - etc.

### *Geography.*

- $1^1$ Descriptive.
  - $1^2$ Location.
  - $2^2$ Boundaries.
  - $3^2$ Surface.
  - etc.
- $2^1$ Physical.
  - $1^2$ Physics of the land.
  - $2^2$ Physics of the water.
  - $3^2$ Physics of the atmosphere.
- $3^1$ Mathematical.
  - $1^2$ Imaginary circles.
  - $2^2$ Phenomena of day and night.
  - $3^2$ Phenomena of the seasons.
  - etc.

*U. S. History.*

$1^1$ Colonization, 1000–1776.
  $1^2$ Preparation or discovery.
  $2^2$ Settlement.
  $3^2$ Consolidation.
$2^1$ Nationalization, 1776–1876.
  $1^2$ Separation.
  $2^2$ Confederation.
  $3^2$ Federation.
$3^1$ Renationalization, 1876–
  etc.

The reader is referred to Chapter II. of this book for a fuller exemplification.

Teachers should carefully keep sight of the fact that the real arrangement is in the mind, and the mechanical outline is merely a help, not an end; just as the written solution of a problem in arithmetic is merely the outward mechanical expression of what is already analyzed mentally. The danger in using outlines is that teacher and pupils are apt to overdo them, and make them ends instead of means.

Properly used, the outline is an excellent aid in all thinking and doing, for the *faculty* used in forming and classifying concepts is *judgment*. By its power of judging, the mind decides that two objects or thoughts agree in some respect, have a quality in common, and should be named in the same class. Judgment is constantly at work in the process of comparison, classification, and outlining. This is evident when it is remembered that the sole business of judgment is to *perceive relations*, and that an outline is the expression of the relations between concepts.

## RETENTION.

*Retention* is the last step in acquisition, since without it no acquisition would be permanent. The faculty is memory, which has been discussed already. A few more words may be added here by way of emphasis.

Retention is directly proportioned to *attention.*

Retention is directly proportioned to *vividness* of the concept.

Retention, attention, and vividness are all directly proportioned to *interest.*

*Newness* is one means of arousing interest, but it is too often overlooked that the mere fact of a thing being new does not necessarily arouse interest. There must be enough of the old (the already understood) in any new object or fact to afford the mind a fulcrum by which to lift it all into comprehension.

Isolated, unrelated facts are difficult to remember, and usually are not worth remembering. It is quite essential to good retention that concepts be grouped according to some resemblance or some logical arrangement. This is work for the judgment; and it is certain that this faculty comes into exercise, in this and other ways, very early in the development of the mind. Such work of the logical faculty should be encouraged in children: it quickens interest, and so helps attention.

Finally, since accurate definition gives clearness and distinctness — and so vividness — to a concept, definition aids retention directly and strongly. These facts may be applied in everyday teaching in numerous ways, which the ingenuity of the teacher will constantly suggest.

## CHAPTER XIV.

### CULTIVATION OF ACQUISITIVE FACULTIES.

SINCE acquisition supplies the mind with all its materials for thought, all its elements for imaginative creation, all its data for intelligent action in everyday affairs, the schools (since they are supposed to give a preparation for actual life) should carefully develop and train the faculties engaged in the accumulation and storing of knowledge-material.

**The Senses Æsthetic.** The *outward perceptives*, the physical senses, besides supplying materials out of which all our fundamental concepts are formed, furnish direct stimulus to the inner sense of the beautiful, the æsthetic taste. Through the cultivated senses much of human enjoyment is gained. The cultivated eye drinks in the beauty of color and forms, the trained ear delights in music, the hand that has been taught to figure what the eye sees or the imagination creates ministers to refined pleasure. Enjoyment gained through the senses is just as human, just as legitimate, and may be just as pure, as that gained through what is called the "higher nature." In fact, the normal moral nature is aroused and stimulated and developed, at first, almost wholly through the senses. The business of teachers, then, — whether they teach in the home, the school, the pulpit, or through the press, — is not to decry and degrade the pleasure gained through the senses, but to

train the mind to enjoy and appreciate the outward beauty of objects of sense and the deeper beauty which is only symbolized by this. Let children early learn to open wide every gateway of sense to the incoming of the beautiful.

**Judgment in Acquisition.**

The *judgment* must be trained to the quick and accurate perception of resemblances and differences in the process of conception. It should be especially taught to discern resemblances of *form* and *function*, since the classifications of highest value in any realm of knowledge rest almost solely upon these.

**Memory in Acquisition.**

*Memory*, the retentive faculty, must be developed so that it shall hold and recall what is valuable, and *let the rest go*. Memory should not be burdened with all that is learned. Many things not particularly worth remembering have to be learned in order to exemplify and illustrate, or show the logical connection of the things that must be remembered. Such subsidiary matters it is as well to forget, after the main facts are understood and associated in memory.

Kindergartens and primary schools do their work in accordance with these principles; and the secondary schools, colleges, and universities are pretty generally coming under the influences which are determining the direction and method of the lower education.

## NATURE STUDY.

One of the best means of cultivating the powers of acquisition is to be found in nature studies. And this does not mean that "nature" is to be brought into the schoolroom to be studied (though that can occasionally

be done with profit), but that the school should be directed or taken to nature outdoors.

It is an important fact that in just the proportion that a method or means of right education is valuable and effective in skilled hands, in that proportion will it degenerate into wooden mechanism when improperly used. This may help to explain why there has been so much dreary nonsense taught under the names of *object lessons*, *nature studies*, etc., when teachers and pupils have tried to study things taken out of nature and brought indoors. Much good may be derived from the classroom or indoor study of natural objects, but not before there has been much outdoor work done.

**Opportunities of the Country Teacher.**

The country teacher has opportunities far beyond the city teacher for cultivating an accurate observation and refined appreciation of nature. Let him go with his school into the fields and woods that stretch before his schoolhouse door, and there *see* all he can himself, and get the pupils to see all they can. Let him strive to open their senses to the riches of light and color and form and sound all about them. Let him, by deft questioning, stimulate them to observe, compare, and classify leaves, stones, trees, flowers, insects,—all things, animate and inanimate, that are found,—even if the classification extends no further than to properly placing the objects in the mineral, vegetable, or animal kingdom. Even if the teacher knows nothing of botany, or mineralogy, or zoölogy, he can have leaves classified as oval, or spear-shaped, or cordate, or round; as acute or obtuse; as toothed, divided, or entire. He can show that some flowers have five petals, some three, some none; that some plants have stems and

fibrous roots, while others are stemless and have bulbous roots. He can get his pupils interested to find the first flower in the spring, and the last one in the autumn; to note those trees and shrubs that flower before leafing; to observe how the buds are covered in autumn, and how they unfold in spring. He can show the differences between sand and clay, between limestone and sandstone, and (according to location) granite and marble. He can point out the form characteristics of insects, reptiles, and higher animals, and interest his pupils in studying their habits. The teacher should also get his pupils to observe and record the weather conditions. One pupil can be detailed to read the thermometer at stated periods every day; another, to note the direction of the wind; another, to observe the sky, noting the character and extent of the cloudiness; and so on. All the pupils should make daily observations at the same time, carefully record them, and compare the results with the records of those specially appointed. All should be particularly instructed to note and *test* all local traditional *weather signs*. Much superstitious nonsense can thus be cleared away, while the young people are being taught to observe and record accurately.

All these, and hundreds of other things that these may suggest, the teacher can do, with but a little exercise of his own powers of observing and judging, and a little reading of any of the excellent elementary books on science that are now so numerous. And how the powers of his pupils to perceive and compare and classify will grow under such stimulating direction! A new world will be opened to both teacher and pupils.

Some objects may be brought back from these little

observation tours to serve as *drawing models;* others, to be neatly labeled, and grouped in a cabinet. All the acquisitive faculties will be brought into play by such simple exercises, and every study will reveal the quickened intellectual impulse. Time will be gained, for all study will be done with greater interest and zeal.

In childhood the acquisitive powers are most active, and hence children should be brought into such intimate and appreciative contact with nature that the impress upon the mind may be deep and lasting. The need of such training of the senses is admirably set forth in the following quotation from Powell, himself one of the keenest observers of nature: "There is absolutely nothing in our common school culture to make a child familiar with the earth, the soil, the forces, the life, animal or vegetable, that he must as a farmer deal with. There is no cause for wonder that the drift of our population is away from farms into cities. That which makes soil culture delightful is familiarity with the chemistry and biology that surround us. To be ignorant of the stones and the clays, not even to comprehend the simplest operations of nature about us, is to deaden farm life beyond endurance."

### Object Teaching.

But there are numerous indoor exercises for training the perceptives of pupils, — exercises upon the weight, shape, size, surface, origin, and use of common things. Geometrical forms (triangles, squares, circles, cubes, cylinders, etc.); the qualities and uses and origin of coal, wood, glass, chalk, iron, — these and many other such things afford abundant and excellent material for perception and conception, and will arouse and hold

the interest of any child. Time may be saved, because interest will be intensified, by setting aside a few minutes daily to ask and answer such questions as these:—

*What is horn? Where is it obtained?*

*What is glass?*

*What things in common use are dug out of the ground?*

*What foods are obtained from trees?*

*What common articles are made of glass? Of iron? Of wood? Of clay?*

*What is soil? How is it made?*

*What is frost? Rain? Fog? Ice?*

This work can be done in the primary grades in "conversation exercises," or it may be presented in interesting morning talks to the whole school. In either case, *mechanical formalism* must be carefully avoided.

In connection with the work suggested above, drawing and modeling can be used, and should be used, in both country and town schools. Such exercises as these, though they are not provided for in the regular curricula of many primary schools outside the larger towns, and though in many instances they would be opposed by ignorant Boards and parents, may nevertheless be used in some form or other, with more or less frequency, by an ingenious teacher in any school.

## REGULAR BRANCHES.

In addition to these exercises which lie outside the usual work of the average school, there are several studies which are in the list of "required branches" that are especially suited to the cultivation of the acquisitive powers. These are *reading, spelling, geography, physiology.* Of course, the *beginnings* of any

subject furnish more material for acquisition than for any other operation of the mind; but those just named do so, throughout both the primary and advanced work in them, in a greater degree than the other branches.

Reading.

*Reading*, properly taught, may be made to cultivate almost every faculty of the human mind. It is more important than any other branch, or — it might not be too much to say — than all other branches taught in the common schools. *It is the key to all stored knowledge.* It cultivates the powers of acquisition from the first word the child reads, through a lifetime of mental growth. The child beginning to read puts forth acquisitive effort upon each new word met with; and the form of the word, its pronunciation, and its meaning, become objects of perception, conception, and retention. When word forms are sufficiently well mastered to enable the pupil to give his thought to the meanings of words rather than to their forms, then reading is a means to the limitless acquisition of new concepts.

Supplementary Reading.

To quicken interest, develop memory, and to introduce the pupil to a wider range of facts than the regular reading lessons offer, two lines of supplementary work are excellent, — one, reading from the various nature books, geographical readers, etc., now so abundant; the other, learning by heart choice selections of the best poetry and prose within the comprehension of the pupil. The acquisition of real gems of literature in this way is especially desirable. What is learned of good literature in early childhood will prove of the highest value in later literary culture. Thoughts, words, and modes of expression, learned while the mind is highly acquisitive, help

to mold the thought and speech of the individual all through life.

Spelling.

*Spelling* is a memory study, and affords exercise for the visual, auditory, and muscular senses. The child learns to spell best through the *eye*, by observing the relative positions of the letters in words as he sees them. But by writing words often, the muscular effort, associated with the eye impressions, helps to fix the form in memory. There should be much *written* spelling in every school.

Each lesson should be made a spelling lesson, the pupil understanding that he may be called on to spell any word in any lesson. This training will quicken and sharpen observation and retention of word forms. Oral spelling is useful mainly in training the ear to correct sounds of letters. It should be used with that purpose constantly in view. Oral spelling has but little use except to aid the pupil in acquiring correct enunciation and pronunciation. If oral spelling exercises are not directed to these ends, they are of little use.

Geography.

*Geography*, if taught solely from a text-book (as it almost universally is, even in primary schools), is almost wholly a memory study, affording material mainly for the retentive faculty. As usually taught, it affords cultivation only incidentally for imagination, and almost not at all for observation. But since, in the case of children, ready-made concepts are worth little or nothing, it will be found that geography is best taught *objectively*. The class should be taken outdoors often, and be shown watersheds, the formation of streams, islands, deltas, capes, etc. Any stream, or even the street or the "big road" after a shower, will furnish proper material for such observation lessons.

In mathematical geography, observation should be trained by use of a globe or ball; in political geography, by use of maps and by map drawing; in economic and physical geography, by making relief maps, with actual products placed upon them. All this is trite enough, and has been said numberless times by numberless writers and speakers on educational subjects; but it will bear repeating and re-repeating until a majority of teachers act upon the psychological principle involved, — that concepts are best gained by children through *percepts*, and these are gained through the *senses*.

What has been said of geography as an acquisition study may be said with equal force of *physiology*. The pupils themselves, their daily habits and activities, are the best apparatus for teaching physiology in the primary schools. The study of physiology involves mainly the faculties of observation and retention; and, if proper opportunity and stimulus be given for observation, memory will readily retain the percepts and concepts acquired. Material for the study of muscle, nerve, and bone, may be had in the pupils' lunch baskets; that for the study of other structures — joints, lungs and trachea, heart, etc. — may be secured from any meat shop, or in the country when the winter's killing is being done. The pupils themselves furnish the best means of illustrating human anatomy and physiology. No text-book is needed for the successful teaching of physiology in primary grades; but, if one is used, its statements should be verified and illustrated by what the pupils can perceive of their own organism, and by their own good or bad habits of eating, sleeping, breathing, sitting, etc.

**Physiology.**

## Elements of All Branches.

Formal teaching in school should not begin in the case of children, as a rule, until they are seven years old. This is true because formal teaching should not begin until there is a large store of percepts and concepts ready in the child's mind to be used by the teacher. The child enters school with the elements of all knowledge already acquired: it remains for the teacher to ascertain, in each individual case, how extensive this stock of knowledge is, and *to use it as a basis for all further acquisition.* The concepts the child has already acquired before coming to school are quite different from those he is expected to acquire during his first days at school. By all means, this difference should be reduced to a minimum. Concepts familiar to the child must be used to explain and illustrate new concepts: the *new* must ever be interpreted in terms of the familiar.

A new subject or a new lesson should be introduced by a sound drill upon the meanings and uses of the unfamiliar terms involved. Attention is to be directed to new words in the next reading lesson; to *plus, add, sum,* etc., when addition is begun; to *nouns* as names with which the pupil is already familiar, etc. General definitions and rules should be ventured upon only when the teacher is sure, from many and varied tests, that the pupil *knows the thing* to be defined, or the *process* to be described. No commoner or more vicious blunder is made in teaching than to give *words* before *things, rules* before *processes.*

Each study has its own terms, more or less technical, its own principles, and its own peculiar set of new ideas.

Such of these as are fundamental must be ***mastered*** by the pupil. He must *acquire* them, form the proper concepts, and hold them in memory ready for prompt recall when needed.

*What? When? Where?* — these three are preëminently the "questions of acquisition," and should be used to exercise the pupil's power to perceive, to form concepts, to define, and to remember. The ***teaching*** teacher will devise many means of so stimulating the curiosity of the pupils that they will often and pertinently ask these questions of the teacher and of themselves. *What* is it, *where* is it, *whence* is it, in nature study and object drills; *what* is it, in reading and spelling; *what* is it and *when* was it, in history, — this will serve as a hint of how such questions may be constantly and profitably used in acquisition exercises and studies.

# CHAPTER XV.

## ASSIMILATION: CONCEPTION, REASONING.

General Definition.

ASSIMILATION may be defined in its narrower sense as the operation of the faculty of judgment in perceiving and formulating relations: (1) relations of percepts, (2) relations of concepts, and (3) the relations of these relations. But there is a broader sense in which the term *assimilation* may be used. It means *self-building*, and so includes those processes which produce *character*. Just as physical assimilation of food produces new muscle and bone and nerve fiber, so mental assimilation results in new thoughts, new ideals, new purposes,—a more vigorous intellectual and moral growth.

### CONCEPTION.

Of assimilation in this sense, *conception* (often called now *apperception*) is the first step. The process of conception is assimilative, because it is essentially a process of likening newly observed phenomena, whether objective or subjective, to one another, and to some part of our body of knowledge already gathered,—of fitting them into their places as determined by resemblances to what we already know. Conception is the connecting process between acquisition and assimilation: it is the chief process in acquisition, the most elementary in assimilation. It has received consideration in Chapter XIII.

## REASONING.

The next process in assimilation is *reasoning*, which may be formally defined as *that process by which we reach conclusions*. The faculty concerned in the essential act of reasoning is *judgment*, but it makes use of all that the other faculties can supply. Through perception and conception the "raw materials" of our conclusions are collected. Imagination frames other possible concepts and relations; and judgment selects, compares, discriminates, combines, and concludes. Since our business, our politics, our religion, our daily conduct in all lines of activity in which we may be engaged, are based on our *conclusions*, it is evident that the habit of reasoning rapidly and accurately should be formed early and thoroughly.

The perception and formulation of relations between concepts was presented in one of its phases in "Outlining." Another phase is the formulation of *propositions;* as, "Man is an animal," "Snow is white," "Activity is delightful." Such formulated propositions are usually called *judgments*, taking the name from the faculty. Logicians name several kinds of judgments,—affirmative, negative, analytic, synthetic, singular, universal, implicit.

**Kinds of Judgments.**

An *affirmative* judgment is based on a perception of likeness or identity, and declares something to be so; as, "Mind is a growth."

A *negative* judgment is based on the perception of difference, and declares something not to be so; as, "Memorizing is not learning."

An *analytic* judgment affirms the relations of parts to parts, or of parts to a whole separable into these

parts. It proceeds from wholes to parts. The analysis of a sentence is a good example

A *synthetic* judgment affirms the relations of parts to parts as composing and completing the whole. It proceeds from parts to wholes. Parsing, properly done, is a fair example, the several words being described in their relation to the whole sentence. To say that oxygen and hydrogen compose water is to express a synthetic judgment. The classification of individuals into species, species into families, families into orders, etc., in botany and zoölogy, affords another illustration. Judgment is at work synthetically also when it is generalizing, — going from particulars to wholes, as in inductive reasoning.

A *singular* judgment is one that affirms or denies something of a single thing, an individual; as, "This man is ill."

A *universal* judgment is one that affirms or denies something of a whole class of things; as, "All men are liars."

An *implicit* judgment is an unconscious, or at least unformulated, perception of relation. If I think or say, "This is an apple," I implicitly affirm, "This object is like other objects called apples, and is therefore to be named apple."

The natural tendency of the mind, in child or adult, is first in the direction of *affirmative* and *universal* judgments; that is, the mind naturally first seeks resemblances, and affirmative judgments are based upon these. And although the child must for some time make individual judgments, yet, as experience widens, he is, by natural tendency, prone to make affirmations that are widely general. The mind is always desirous

of reaching conclusions of the widest possible applicability.

Deduction.

The comparison of two or more judgments or propositions, perceiving their relations, and formulating these relations into another proposition, is the form of reasoning called *deduction*. The formal expression of an argument in this kind of reasoning is a *syllogism* or series of syllogisms. A syllogism fully expressed is made up of three propositions. To illustrate:—

> All sheep are woolly,
> This animal is a sheep,
> Therefore this animal is woolly.

This will serve as a fair specimen of the syllogism as usually presented.

The first and second propositions of a syllogism are called *premises;* the third, the *conclusion*. Each of the three is a statement of a perceived relation, and is therefore the result of an act of judging. In the example given, the first proposition is the statement of a relation between *sheep* and *woolliness;* the second, of a relation between a certain animal and the class called *sheep;* the third is a statement of a relation between the two *relations* stated in the first and second.

The Enthymeme.

An *enthymeme* is a syllogism with one of its premises suppressed; as, "She will talk, being a woman." The major premise, "All women will talk," is suppressed.

It is hardly necessary to say that the regular syllogism is not used in practical deductive reasoning. Most of even formal arguments are expressed in enthymemes. One can become a lucid and exact reasoner without

ever having seen a syllogism; and it is somewhat doubtful whether a knowledge of formal logic is an aid in a real search for truth. What has so far been said of deduction is rather by way of warning, that the teacher may avoid formalism. Another form or method of reasoning is called *induction*. Deduction means *drawing down from*, drawing out a conclusion from general or individual propositions already stated. Induction means *drawing in* a conclusion into a number of related facts, thus correlating them, and bringing them under a general law. Deduction is making a special application of some general principle or fact, as in the syllogism on p. 194. Induction is generalizing from a number of particular cases to a general principle applying to all of them and to all like them.

**Induction.**

We observe the absence of upper incisors in this cow, in that one, and in others, and draw the conclusion that "all cows lack the upper incisors." We find from observation that heat expands iron and gold and platinum: we conclude that "heat expands all metals."

The three chief aids to correct induction are *experience*, *observation*, *experimentation*. Experience is the memory of what happens to one's self; observation is taking careful note of facts that occur in the everyday course of nature; experimentation is causing things to occur in a certain order or relation, under given conditions, and noting the results. Sociology (history and civics) as a science is made up of inductions from *experience;* geography, geology, biology and its subdivisions, are built on inductions from *observation;* physics and chemistry are preëminently the *experimental* sciences.

**Aids to Induction.**

All three methods of induction may be applied in a study of the science and art of education. At first, teaching was purely a matter of experience, an empirical calling; then it became observational, the teacher taking intelligent note of the results of his own methods and of the methods of others; now many experiments in education are being carefully tried everywhere and the results recorded. Upon these three pillars — experience, observation, experimentation — the true science of education will rest.

The grandest generalizations in science, the most splendid discoveries of natural law, have been made through induction. The laws of gravitation, the nebular hypothesis, the evolutionary hypothesis, — these are illustrations of what the patient accumulation of facts and the persistent seeking-out and formulating of their relations have accomplished. The universality of law is another of the great scientific inductions. It embodies the truths that all phenomena happen in accord with fixed laws, and that the same kinds of phenomena are governed by similar laws. Upon this generalization rest many other scientific truths and theories. Approximate proof of the universality of law could not have been arrived at through *deduction*, for there was *nothing to deduce from*. It was reached only through wide and intelligent observation of natural phenomena of every kind.

**Value of Induction.**

The theory of the conservation and correlation of energy is another example of induction of the highest order. The discovery that all forces may be changed into one another — that electricity may be converted into heat or into light, that gravitation may be converted into heat or electricity, etc. — could have been

made only by observation and experience of a large number of such transformations, supplemented by careful and exact experimentation.

In the common affairs of life, induction is as much used, and is as important, as in the widest ranges of scientific investigation, and its methods are the same. When we say such a man is not to be trusted, such a business method is sure to result disastrously, or such a line of conduct is immoral, we simply announce special applications of the conclusions we have *inductively* reached.

Induction builds a broader basis for our individual and social morality. The establishment of our ethical relations to the lower animals; the duties of society to the unemployed, the incompetent, and the weak; the principles upon which social reforms are being worked out,—all are arrived at, tested, and corrected through *induction.*

**Induction and Deduction compared.**

It is easy to show that all reasoning is based upon induction. Take, as illustration, geometry, which may fairly be considered sufficiently abstract to serve as a test — unless we put mathematical reasoning in a class by itself, as Hopkins does. The method of argument in geometry runs as follows, if carried out in full: the sum of all the angles of this triangle is two right angles; this is true of a second and third triangle, and of all triangles that have been seen. Therefore, since these represent all possible triangles, the sum of the angles of any triangle is two right angles.

In any form of the syllogism (the formal instrument of the deductive method), the value of a *conclusion* depends *solely upon the truth* of the *premises.* Of the

truth of the premises we can have no evidence whatever, as a rule, except through induction.

In the syllogism, "All cows lack upper incisors, this animal is a cow, therefore it lacks upper incisors," the first premise rests wholly on *induction*, and cannot possibly be reached by *deduction*. It is not intended to say that deduction is not of high value; but it is intended to say that deduction is of value in direct proportion to the thoroughness of the induction which must in every case precede it, and establish its premises. Through the laws of gravitation reached by inductive processes, the existence and position of heavenly bodies, unknown before the discovery of these laws, have been accurately deduced. But it is plain that it would be utterly impossible to make such deductions were it not for the previous induction. The relative methods and values of the two forms of reasoning may be summed up as follows:—

*Induction* proceeds from particular cases to the general laws or principles governing all such cases. It is aided by observation, experience, and experimentation. It furnishes the materials and the *general rules* for the solution of special problems which may present themselves in everyday life. "The method, rightly understood and practiced, leads straight to truth. It is the patient, candid, impartial, universal method of modern science."

*Deduction* proceeds from generals to particulars: it draws out of the general principle an application to, or explanation of, a given special case. It is the method of fitting our experiences to the requirements of our everyday lives, and to the puzzling questions that arise for settlement in business, politics, or ethics.

The error we need to guard against most, in reaching conclusions, is *generalizing from insufficient data*, which means jumping at conclusions before enough facts are known. The human mind has a strong natural tendency, especially observable in the young and in the untrained, to formulate *general truths*, to reach working rules of action, before enough particular cases have been noted to justify a conclusion. This tendency needs restraining and directing, and careful disciplining. The desire to formulate general truth, mingled with the taint of superstition which is inherent in every human mind, leads to such absurd beliefs as that the moon's phases affect the shingles of a roof, the making of soap, or the planting of seeds; that ill luck follows carrying a hoe through the house, or breaking a mirror, or spilling salt, etc. There is no more profitable thing the teacher can do than to help explode these beliefs, by having his older pupils keep *careful record* of actual results as observed by themselves. Besides showing the absurdity of these prevalent superstitions, such a plan would greatly stimulate the ability and desire of the pupils to collate facts, and to draw their own conclusions.

**Hasty Generalizations.**

### *Cultivating the Power to Reason.*

Correct reasoning (correct judging) depends upon careful and accurate observation and accumulation of all facts that may have a bearing upon the matter in hand, and upon the power to perceive quickly and correctly the true relations of the facts.

Teachers should train their pupils to observe intelligently, and with interest wide awake, all facts that come in their way. Then, with the questions *Why?*

and *How?* (preëminently ***assimilation*** questions, as *What? When? Where?* are ***acquisition*** questions,) young minds, already on edge with curiosity, may be led to discern relations accurately and to draw conclusions correctly. Nothing is more needed in the practical life of to-day than the power to face facts, and *reason upon them*. It is due to the neglect of cultivating the power to reason inductively—a neglect too prevalent still in formal education, from the primary school to the university—that the *master of arts* is not always, by any means, *master of the situation*.

**Obstacles.** There are two obstacles to the proper training of the reasoning faculty (judgment) in schools. One is the habit, fixed upon so many teachers, of slavishly following the text-book instead of drawing largely upon the practical experiences of everyday life outside the schoolroom for teaching material. The other is the tendency of both teachers and pupils, in their hurry to cover a certain number of lessons in a given time, to make "getting a lesson" mean committing it to memory, whether it be understood or not. Memorizing is quick and easy: thinking out and telling *why* and *how* are hard. Speaking of the practice of memorizing (rather than reasoning upon) the facts in different studies, President Eliot forcibly says, "No amount of such studies will protect one from believing in astrology or theosophy. . . . One is fortified against the acceptance of unreasonable propositions only by skill in determining facts through observation and experience, by practice in comparing facts or groups of facts, and by the unvarying habit of questioning and verifying allegations, and of distinguishing between facts and inferences from facts."

There are many exercises, both in and out of the text-books, that may be used to develop and train the judgment, even of children. Here, as in cultivating the acquisitive powers, the best material will be found in common things. To too many teachers common things are *commonplace*, but not so to the child; not at least until he has gone to school long enough to have his intelligent curiosity repressed and blunted. The child begins early to ask *why* and *how;* and the teacher should take the hint, ask these questions often of the pupils, and direct their use of them. A few minutes each day, or less often, as time allows, can be used to no better purpose than to quicken the child's curiosity, and his power to investigate, give reasons, and draw conclusions, by questions upon common facts, and later by simple experiments with common things. A few illustrations may be suggestive: —

**Use of Common Things.**

**Illustrations.**

*Why do we light a fire from the bottom?*
*What would happen if ice were heavier than water?*
*Why are wheat stems hollow?*
*Why does water flow down hill?*
*Why does a lamp smoke when the top of the chimney is covered?*
*Why does not wood sink?*
*How is a nail held in wood?*
*Why does rain fall in drops?*
*Why is there no hoarfrost on a* cloudy *night?*
*What causes the moisture on the outside of a vessel of cold water on a warm day?*
*Why can we see the breath in winter, and not in summer?*

When experiments are used, they should be of the

simplest nature, should often be performed by the pupils themselves, and should quicken *perception* as well as judgment. Only one or two examples of such experiments need be given here: the ingenuity of the teacher will suggest many more.

On some cool day, when the schoolroom is heated, open the door to a crack about an inch wide. Hold a lighted match or bit of burning paper near the crack, at the top, while a pupil holds a similar light near the bottom. Have the pupils note the directions in which the flames are turned, — one in, the other out. Why?

Fill a glass with water to the brim. About a half pound of small nails can be dropped into it slowly without running the water over. Why?

**Reflective Studies.**

The text-book branches specially adapted to cultivating the reflective power are *arithmetic*, *grammar*, *advanced history*, and *civics*. The greatest stress has usually been laid on arithmetic for this purpose, but it is not the best study for training judgment. Successful practical living requires a judgment trained to infer correctly from *probabilities;* arithmetic cultivates the power only to reason from *certainties* to certainties. The same is true of mathematics from arithmetic up.

**Arithmetic.**

The study of arithmetic may all too easily become a memory-cramming, answer-getting mechanism. No training for judgment can be found in arithmetic unless a careful distinction be made, in the statement of every problem, between the quantities *given* and those *required;* and unless every step in the solution is logically based on a previous step, or on one or more of the given conditions: hence the necessity for much oral work in arithmetic, and for re-

quiring pupils to follow a *logical form* in their written solutions. At every step in arithmetic, "Why is this true?" and "How was that obtained?" should be asked by the teacher, until telling the why and how becomes a fixed habit in the pupil. Of course, *processes* should be taught before rules, and answers should be often verified.

Grammar.

Grammar is especially adapted to the cultivation of the reflective faculty in pupils old enough to use a text-book in the study of that subject. Technical grammar is *elementary logic*. Diagraming and parsing, which are coming again into favor as school exercises, and which should never have gone out, cannot be done correctly unless the meaning of the sentence be grasped; and this cannot be done unless the true *relations* of the words and phrases to the concepts they name, and to one another, be clearly seen. If this could be kept in view in all teaching of technical grammar, the work could never degenerate into a parsing grind. There is more valuable discipline for the relational faculty in thorough drill in diagraming and analyzing the English sentence than in arithmetical analysis.

History and Civics.

History and civics, from the time they may be profitably taught from text-books, are of the highest practical value in the education of judgment. They afford ever-recurring occasions for asking questions that stimulate the reflective power of the pupils. To teach history without training the judgment of the pupil is merely to stuff his memory with valueless facts,—valueless, because their relations are not perceived, their causes are not understood.

If it is true that no fact is of value in itself, standing

unrelated with other facts, it is especially true in history. The facts of human civilization, of the origin and growth of those things that we call government and religion and liberty and science and art,—these are the facts of supremest value to every citizen, whether young or old; but they are valuable only as they are *related* to one another and to our own institutions. It will not do to merely *instruct* boys and girls in the facts of history, on the supposition that they will learn of themselves to correlate and explain these facts as judgment grows more mature. The pupil must be taught to *think* from the start, if he is to do much good thinking later in life. The facts imparted must be, in number and kind, suited to the advancement of the pupil; and he should be led to seek for and find, with the teacher's aid, the *causes* of events. It is well to take some time from fact-getting to investigate with classes in United States history and civics such questions as:—

*Why are the North American red men called* Indians?

*Why has Rhode Island two capitals?*

*Why was the government under the Articles of Confederation a failure?*

*Why did not the North continue to own slaves as long as the South did?*

*Why should each State have two senators in Congress?*

*Would a republican form of government be good for every country?*

*Why was the "Monroe Doctrine" proclaimed?*

*Why do the New England States have so many manufacturing industries?*

*Why do more railroads run east and west than run north and south?*

*Is it wise to* elect *judicial officers?*
*Are parties essential to good government?*
*Why do the United States have a flag?*

While the studies above mentioned are especially suited to cultivate the thought powers, any study may be made to do so if taught by the *inductive* method. Get the pupil to observe and study facts and processes, and then to make *his own definitions and rules.*

It will bear repeating, that the conclusions which we look upon as most valuable, and upon which our daily actions in any line of work are based, are drawn by *induction* either directly or indirectly from accumulated experience. Then, if the man or woman is expected to be independent and self-reliant, to think clearly and decide wisely, the boy or girl must be trained to accurate observation of facts, and to judicial reflection upon their relations and bearings.

Definitions and rules, in life as in grammar, in morals as in mathematics, are but the generalizations of many particulars; and as the student of arithmetic cannot work independently until he can generalize his own rules out of familiar processes, so the citizen cannot be independent in character and living until he can generalize his rules of conduct out of the experiences of human life.

## CHAPTER XVI.

### ASSIMILATION : IMAGINING.

IN Chapter IX. the distinction between memory and imagination, and the functions and value of the latter faculty, were presented at some length. In this chapter it is proposed to attend more to the *processes* of constructive or creative imagining, as involved in assimilation, and to the proper cultivation of the faculty. Assimilation was defined in its broadest sense as *self-building*, not only making new experiences fit in with those already gained, but combining all so as to create new thought, new purpose, new character. The work of imagination in this is indispensable. Even acquisition is slow and laborious for the child or man deficient in imagination; and proper assimilation is still more difficult for the mind which lacks combining and creative power.

**Materials of Imagining.**

The materials which imagination uses in its work are percepts and concepts furnished by memory, or those now being formed in consciousness, or all together. The creative faculty may take something from the accumulated store of knowledge, or it may use what is now being presented through the senses, or concepts as they are formed, or all these, from which to make its combinations. The chance notes that float in upon a Mozart's ear may serve as a nucleus around which the musical imagination will

build a symphony; the passing flash of color may be just the stimulus needed to arouse the activity of the artist's imagination; the transient pose of some graceful figure may furnish the image needed by the sculptor to round into perfect symmetry the form he is creating. Some chance remembrance, some reawakened train of association, may be what is needed to start into action the creative energy of the poet or the scientific investigator.

**Office of other Faculties.**

As has already been seen, no faculty works alone and independent of the others. Imagination needs and receives the aid of the *senses, memory, judgment*, the *feelings*, and *will*. The process of imagining, in which imagination is of course the chief actor and the other faculties subordinates, is approximately as follows: The perceptives and memory furnish the materials,—percepts and concepts; judgment examines and selects such as seem suitable to the work in hand; and imagination combines, submitting the result to judgment for final decision. Will directs the whole process, — commands memory to bring forth its store of appropriate material; orders judgment to select what is needed, and to decide upon the results; and sets imagination to the task of modifying and combining. The coworking of the several faculties, in imagining, may be illustrated by particular examples.

The merchant takes stock of his experiences, selecting such as have a more or less direct bearing upon his present conditions. Between these selected experiences and the present requirements of his business, imagination forms combinations which picture possible improvements, a better organization of his subordinates, more attractive methods of advertising, and an increase of trade.

Each plan suggested is carefully tested by his judgment, modified somewhat in detail, finally pronounced good, and put into practice; or is found wanting, and rejected.

At this writing, Professor Langley, of the Smithsonian Institution, is at work upon a flying machine. His perception of the flight of birds, and his knowledge (memory) of what has been attempted in aërial navigation, furnished him with the elements. Judgment selected such as it deemed most usable under the given conditions of weight, speed, and dirigibility; and out of these his inventive imagination created an ideal, to which he is making the machine now under construction more or less closely approximate. A *model* must have been in his mind before he could have begun even to draw the plans of his structure.

The geologist, not content with mere observation of rock and stream and glacial marking, seeks to construct a theory that shall reach into the endless past of geologic time, and group and harmonize and unify all known facts, and make the wrinkled surface of earth a page to be read by those who would know its message. He makes many possible combinations of observed facts, tries to explain them in terms of present phenomena, and so, piece by piece, builds up an earth history. Such work requires creative power of a high order. There is but one Lyell, or Dana, or Geikie, to thousands of fact collectors.

The architects and artists who created the Columbian buildings drew upon every resource of memory or present perception of form and color for possible elements of new combinations. Judgment selected such as were harmonious, or capable of being made so, with one

another and with the ideal structures and color effects already dimly foreshadowed by imagination. Then the creative faculty grouped and unified these elements into the images which were afterward bodied forth in such grandeur of harmonious wholes, and in such beautiful execution of detail as compelled the æsthetic approval of nations.

Dickens, George Eliot, Carlyle, Lowell,—all the master weavers of words, had abundant riches of observation, experience, feeling, and reasoning. These were sifted, compared, combined, *created* into new relations, new meanings, new truth for the world.

In these higher activities of imagination, which alone are usually called *creative*, the work of judgment and will seems to become unnecessary and to be suspended. It is only when the mind *plods*, when the faculties have to be driven to work, as they often must be, that we are able to trace their separate functions. But in the higher efforts of creative imagination it seems to work without other compulsion or direction than that of its own activity. In the white heat of genius the limitations of memory are melted away, judgment and imagination become fused into one, and new created thought pours forth in a lambent stream over which will has no control. Genius is conscious of no steps or processes in creation; the fiat goes forth, "*Be*," and *thought is*.

All such work is in the highest degree *assimilative*: it is taking the crude material that comes into the mind through sensation, conception, and reasoning, and making it up into new thought, new ideals, that become an integral part of the character, in accordance with the character's already formed tendencies and limitations. Just as assimilation in muscle, or bone, or nerve, is de-

termined by the cells already formed there, so mental assimilation is modified, if not determined, by the *bent* of the mind. The inventor could not create Becky Sharp any more than Thackeray could have created an air ship; the musician could not create a nebular hypothesis any more than Laplace could have created one of Beethoven's symphonies. The mind, like the cell, takes up what adds to the kind of *tissue* already formed.

### APPLICATIONS TO TEACHING.

Some suggestion as to the help imagination may be to the teacher was made in Chapter IX. There emphasis was laid upon the *sympathetic* imagination, by which the teacher can feel as the pupil feels, misunderstand as the pupil misunderstands, and understand from the learner's point of view. This is a sort of *outward* assimilation, in which the teacher assimilates himself to the pupil. But there is another sense in which this must be done, in effective teaching. The teacher, holding before himself the image of the pupil's limitations, and the actual amount and condition of his knowledge, must cast the facts to be presented to the pupil in such form as will *assimilate* them to what the learner already knows. The teacher must *imagine* such combinations of concepts as will show them in relations that the pupil can comprehend. He must be all the time on the alert to invent illustrations and to make applications that will stimulate the combining and creative imagination of his students, thus enabling them not only to *understand* the matter presented, but to project it upon the screen of consciousness, and *see* it as a picture.

**The Teacher's Need.**

The creative faculty manifests itself in children at a

very early age, and with a proportionately more intense activity than in adults. It manifests itself as early as the second year, and is well developed in the third and fourth years. A child of three and a half years of age has been observed to haul his toy wagon from point to point in the room, and draw imaginary milk for imaginary customers, and receive imaginary pay. The most marked manifestation of imagination in the very young child is in endowing inanimate objects with *life* and *motion*, the idea of the latter being of course aided by actually moving the objects. To the little girl, her rag doll is really alive, and cries or laughs, sleeps or walks, as a flesh-and-blood baby would. To the boy, his line of plain wooden blocks is a train of cars at full speed.

**Imagination in Children.**

The mechanically perfect toy is neither so pleasing nor so beautiful to the child as a piece of wood or bit of iron. The perfect toy, that too accurately represents something, and "goes of itself," leaves nothing to the imagination. This faculty, like all others, is naturally active, and its activity is enjoyable; therefore the child prefers to exercise it in imagining his shapeless bit of material to be by turns a fish, a cat, a wagon, or a steam engine. The boy or girl surfeited with tin bugs that crawl and real steam engines with a sure-enough whistle, or with a life-size doll that shuts its eyes and says "mamma," is glad to turn away from these unsuggestive playthings, and delve into the old box full of broken toys, and find there abundant material for creative imagination to work with. The mechanically perfect toy *limits* imagination by its very completeness: the bit of stick, or wire, or rag, or broken china, can be imagined into any number of forms and uses.

Not infrequently the child imagines so vividly, that he accepts the products of his imagination as real, and insists upon the truth of some very startling statements. The exercise of a little judgment on the part of teacher or parent will make it plain that the child is not lying in any true sense of the word: he *believes* it all himself.

From all that has been said of the uses of imagination, it may readily be inferred that no faculty is more deserving of development and training. There are many exercises and formal studies all the way from the kindergarten to the university that are specially useful in the cultivation of the creative faculty. Clay modeling, paper cutting, weaving, etc., when done so as to allow freedom to the originality of the child, are directly helpful. Too frequently these exercises degenerate into mere copying. Even at the worst, though, the child's imagination runs just ahead of his fingers or just beyond the points of the scissors, and patterns the work. The numerous kindergarten song games also are of great value in imagination training.

**Cultivation of Imagination.**

The exercises of the kindergarten should be continued, with some modifications, into the primary grades, and drawing should be introduced.

In addition, in these grades, the oral exercises and the reading should be carried on with special reference to their influence in developing imagination. The teacher may briefly describe some object not in sight, and have the pupils try to determine from her description what the object is. Accounts of the doings of elves and brownies may be given by both teacher and little folks; trees, flowers, animals, may be endowed with speech, and made to give an account of themselves.

In the simplest reading exercise there is room and also need for imagination,—the persons read of, and what they do, must be vitalized and made real, and the places and events described must be more or less fully pictured, if there is to be any real reading. This is as true of the *first* reading lesson as of the interpretation of Dante or Milton. Reading, let us say it again, is the one exercise which, more than any other, is capable of calling into active use every power of the mind. It nourishes imagination as no other school study can. To read is to interpret,—to see the same scenes, to think the same thoughts, to feel the same motives, to will the same purposes, as those we read of. Only through imagination is it possible to do this.

**Literature and Language.**

Much imaginative literature should be used in the schools from the third grade up. Hans Andersen, Æsop, Crusoe, are classics. At the proper age, children should be made acquainted with the beautiful myths of Greece and Rome. In childhood and youth these things can be thoroughly assimilated, and made an everlasting part of the literary culture and refinement which is one of the most priceless things the student can take with him.

Language lessons and composition should be used to call forth the creative activity of the mind. The reading lesson, a picture, the geography lesson, the unfolding of a flower, anything with a possible personal element of life and action in it, can be used as the basis of oral or written language exercises that shall necessitate purposive use of the imagination.

The power to make combinations and to form images is highly serviceable in much of the work in arithmetic, and is indispensable in the higher mathematics. The

need is not so much to see relations of numbers—judgment takes care of that—as to place the *objects before the mind* so their relations can be readily perceived. In the simplest problem—"If James has five apples and his father gives him six more," etc.—the child must be able to *see* James with the eleven apples. In arithmetical mensuration, in geometry and trigonometry, the need of imagination grows more and more imperative.

**Mathematics.**

Other studies that especially cultivate imagination and call for its exercise are geography and history, including biography. The assimilative or apperceptive work of imagination is constantly required in these two studies, whether primary or the most advanced. Such concepts as *island, glacier, volcano, oasis,* can be formed, and assimilated to the pupil's present body of knowledge, only by an active creative faculty that can combine the simple elements of his experience into images of these things. The child who is prepared to undertake the study of primary geography has probably never seen a river or an island, and certainly not an oasis or a volcano; but he can create pretty accurate concepts of them for himself out of his concepts of small streams, land, unproductive and productive soils, hills, and fire.

**Geography.**

To get anything out of history, the student must be able to put himself back into the time of which he reads,—must see the people, their modes of dress, the circumstances of their daily life; must feel their emotions and desires, their hopes and ambitions; must understand their arts and sciences; must make himself one of them,—before he can form any adequate idea of events or the relations and causes

**History.**

of events in any given period. Young people can image these things with wonderful facility and fidelity, and will do so if only the teacher, in oral lessons or text-book drill, will supply the stimulus of interest, and set the *material* before the creative faculty in the right way. Still more is this true in the study of biography, for in this there is the powerful attractiveness of personality. The history text-books intended for use in classes below the college freshman should contain a great deal of biography, and should group events about the lives and deeds of eminent men and women. And even all the way through the college or university course, in other studies as well as in history, it is well to give imagination this element of the personal about which to group many of its combinations. The history of the struggles and achievements of great mathematicians, chemists, physicists, serves to intensify the creative power of other minds.

**Biography.**

It is mainly through its exercise in literature, history, and biography, that imagination builds the moral character. In this building it has its highest function. Character depends upon *ideals*, and ideals are the standards which imagination forms and sets before us as the measures of our conduct. The materials out of which our ideals are formed we get from the lives of others around us, and from what we read. A great deal of ideal-making is unconscious; and the standard may be formed, and we may find ourselves working toward it, before we discover that it is not worth our endeavor. This emphasizes the need of proper environment for the young,—virtuous associates and correct literature. In much of the fiction of to-day the ideals are distorted and untrue and

**Imagination and Character.**

often vicious. No book is safe that does not hold up sincere, honest, earnest character as the only kind worth building. The prevalent note in much current literature, of a cynical indifference to evil,—a tone of saying "It's bad, but it's common,"—is very destructive of high individual or social ideals. To help counteract this, the experiment has been tried with reassuring success, in some schools, of having the pupils make a "record of virtue" by reporting daily or weekly all the good and true and noble things they could glean from their current reading. The plan is most cordially recommended to all schools. *That image becomes most permanent which is most constantly kept before the mind.*

Parents and teachers should set before boys and girls the best characters in literature, history, and biography; not in any goody-goody way, not with too much stress upon the desirability of imitating them, but in a frank, cordial, rational way. Men and women cannot afford to do otherwise with themselves. What the imagination habitually contemplates, that will it form into the ideals in whose image we make ourselves.

# CHAPTER XVII.

## ASSIMILATION: WILLING.

IT has been shown that the second operation of the mind—assimilation—involves the processes of conception (its first step, and one which connects it with acquisition), reasoning, and imagining. Another process, which though not exclusively an assimilative one yet is essential in assimilation, is *willing*. Every faculty is engaged in making the personality what it is, in building the intellectual and moral character structure. And will directs every faculty in its conscious functioning, determining in large measure what we shall perceive through the senses, what we shall think about, what we shall feel, and what we shall do. Vigor of willing not only *makes* character, it *is* character, it is what we *are* intellectually and morally; and since assimilation is *self-building*, willing is therefore most intimately concerned in assimilation.

**The Will Free.**

In Chapter XII., while nothing was said directly upon the question of the will's "freedom," yet a legitimate inference from the facts there set forth would be, that the will *is free* in the best sense of the word,—free from the absolute rule of motive. That this is true, and to what extent it is true, may be shown by some examples of willing and not-willing which are common in the experience of every one.

On a hot day you suddenly remember that there are

lemons in the cupboard, and ice in the chest; and you want a glass of lemonade so much, that you can, as we say, almost "taste it." But you are too indolent to get up from the hammock and go into the house to make the drink. Your desire is intense, but not enough so to cause your will to act; indeed, you may ineffectively say "I will go" several times, the will making feeble efforts to act in accordance with the desire. In such a case the motive is strong, there is no counter-motive, — for laziness can hardly be called a *motive*, — and yet the will does not respond to desire, is neither inhibited nor moved to effective action by any motive.

Further Illustrations.

Or the question to be decided may be one of the greatest importance in business affairs. Two or more possible lines of action may lie open before you, each involving its own peculiar risks, and holding out its own promises of probable benefits. All the resources of experience are called upon, judgment and imagination are busily at work, and finally judgment pronounces its decision, "This is the course to follow." Then will acts, — determines to follow the course selected by judgment, and begins to direct the mind's energies to its accomplishment.

Not infrequently the judgment is unable to reach a satisfactory decision; and the whole matter is laid aside, will taking no action further than to "throw the case out of court," which it can do at any time. If a decision is reached and put into execution, will acts in accordance with the desire to better your trade, and in harmony with the decision of judgment as to the best way to do that. But the *motive* is no more the *cause* of the action of will than it is of the action of judgment; and it is to be observed that the motive — the

desire to improve your business — is as strong when judgment fails to reach a conclusion on which will can act as it is when the decision is reached and put into execution.

There are people whom the popular phrase declares to be of "strong will." Such people may be, and often are, marked by a limited range of judgment or other faculties. Having but few ideas, reaching but few conclusions, they act upon these with forceful vigor. Will is free in the same sense in which the other faculties are, — free within the limits of knowledge and present environment. On the other hand, it is sometimes true that a man has too much knowledge of the facts in a given case, and his judgment is unable to reach a decision. Or knowledge may be inadequate to enable judgment to decide, and will takes a "leap in the dark," choosing without special reference to any motive.

**Will and Conscience.**

The preceding illustrations may be taken as typifying the action or non-action of will in matters outside of ethics, matters that have no moral quality. Into ethical questions, where the rightness or wrongness of an action is to be considered, a new element enters, another motive, — *conscience*. This feeling of *oughtness*, of obligation to do right and avoid wrong, awakes as soon as any problem involving the morality of conduct is presented to judgment for solution. Until judgment has decided what particular thing is right in any given case, the feeling is simply a general one, a sense of necessity to do right. When judgment has reached a conclusion, conscience becomes a powerful motive, which may be in harmony with the other motives that make themselves felt at the time, or may be in opposition to them all. Will can

not only act in accord with other motives than conscience, or in accord with conscience, but it can also intensify it or the other motives, or dismiss, or at least weaken, all of them, conscience included, and bring up an entirely new set of feelings that may serve as reasons for action.

**Motive not a Cause.** If motive could be relied upon as the *cause* as well as the occasion of willing, then men's actions could be predicted and brought about with the regularity and precision with which a machine may be made to respond to its motive power. To some extent this can be done; and what we mean when we say we are "bringing pressure to bear" on some one, is that we are trying to influence his action through what we believe to be his strongest motives. But every one recognizes the element of uncertainty in even the best calculated scheme by which we hope to gain the desired action of another. So long as the element of uncertainty does not rise above an *average* determined by our experience with men in practical affairs, we call the will *normal;* but if the individual acts often from impulse or whim, or is obstinate and does not yield to ordinary or rational motives, then we call the will *erratic*.

**Abnormal Willing.** There are several phases of abnormal willing, from common impulsive action to conduct that results from deep-seated disease of the will. Willing that is the result of whim or impulse is a type of what may properly be called "non-free" will; for in this, will acts solely in accord with the uppermost motive.

*Obstinacy* seems to be abnormal willing,— willing not in accordance with judgment or normal motives,

but apparently from a desire to *will something*, and will it vigorously, especially if it be different from what would naturally be expected in the case.

By some persons, both children and adults, non-ethical and ethical acts are committed not only involuntarily, but directly against the determination of will. Such acts, no doubt, characterized those "possessed of devils," and it would be hard to find a better term than "possessed" to name such people now. A something within them, not themselves, seems to do the act. Examples of such apparently irresponsible action are sometimes observable in young people of marked nervous temperament. They call out profane or indecent words, or are guilty of reprehensible conduct toward their fellows; and even while in the act, they may suffer intensely from shame or the stings of conscience. Such cases should receive the tenderest and most sympathetic care of parent and teacher, and a close watch should be kept on all unusually nervous children, in order to detect the first signs of this painful neuropathic condition. There are many other more marked aberrancies of will, but they come within the province of medical specialists.

**Summary.**

The several steps in the process of conscious normal willing may be summarized, then, as follows: (1) There is some occasion for choice, two or more possible acts or courses of conduct being offered; (2) the motives begin to solicit decision and determination in favor of this or that; (3) judgment more or less judicially considers the matter in the light of experience and of the possible issues that imagination pictures, and decides which course is expedient; or, if the question be one of morals, which is right; (4) will chooses that

which judgment has recommended, determines to follow it now, or at some fitting future time, and, if now, proceeds to execute its determination by setting the proper muscles to work. But there are many departures from the norm in the process of willing. When the judgment is undisciplined, it as often yields to motive as does a weak will. Persons whose feelings are stronger than their judgment are rightly called prejudiced; they prejudge a matter from their feeling concerning it, without waiting to weigh all the facts that should be considered. Sometimes, in persons of usually calm and unbiased judgment and normal will, some dominant idea seems to take possession of consciousness to the exclusion of all other ideas, and judgment and will both submit to its influence. Under such circumstances we say those persons are "carried away" by whatever temporarily dominates them. They themselves seem to have a subconsciousness that they are not acting wisely. Any one is liable, under the stress of unusual desire or temptation, to do something in direct opposition to what is believed to be wise or right.

## APPLICATIONS TO TEACHING.

The proper education of will is *the making of character*, and necessarily involves the right direction of all the other activities, especially the motives, imagination, and judgment. In cultivating the will, the law of *use* is as important as it is in the development of any other mental power. Every failure to determine, or to *execute* a determination after it is formed, makes the will weaker; every choice deliberately made, every

determination resolutely executed, makes the volitional power more vigorous.

The teacher must set before himself, as the end to be reached in his efforts at character building, *the pupil's self-control in right directions;* and all his means must involve the use of the *pupil's* will. No so-called "discipline" is worth anything, or can be other than injurious, which tries to secure good behavior solely through *external* coercion, or by bribing through a system of prizes and rewards. It is not to be understood that coercion and inducement should not be used at all; but they must not be used except to secure general good conduct until some way can be found by which the pupil can be got to behave *of himself.*

**Self-control.**

The purpose of the American public school is to make citizens capable of living under a form of *self-government.* Self-government in state or nation can mean nothing more than the self-government of the individual. Law is for those who are not self-governing, and does not touch those who have the power of self-control. It is almost beyond dispute that there would be no use for reformatories, jails, state prisons, or criminal courts, if every *individual* in the community could govern himself. Self-control is used here in its widest application, to mean not only control of impulses, of wrong tendencies, of evil desire, and passion, but also to mean control of wasteful activity or negligent sloth of any kind. It includes *self-direction.*

**Impulsive Action Unwise**

To act upon impulse is almost always to act unwisely; and since impulsiveness is characteristic of young people, the teacher's effort must be at first in the direction of getting his

pupils to exercise will as an *inhibitive* force in the control of tendencies to too ready action. They must be made to know that every imprint upon the soul is, in a real sense, ineffaceable. Every indulgence, every selfish act, every "sowing of wild oats," leaves a mark that cannot be outgrown or outlived, no matter how sincere the repentance may be. The nervous, emotional temperament, in adults as well as in children, is prone to waste energy, to spend more muscular force or brain force than is necessary to the proper accomplishment of a given task. Much energy is dissipated in *worry*, a most exhausting form of waste.

**Emotion and Worry.** Many persons, old and young, waste force through the emotions and affections. They indulge in strong emotional excitement as a toper indulges in rum, and the results to both mind and body are nearly as evil in the one case as in the other. All forms of worry and undue emotional excitement should be inhibited through will. The volitional faculty should be used to secure and maintain a calm, evenly balanced life. Dr. Abbott puts it thus: "No problem is so exacting as that which is presented to a man by himself; none other demands for its solution such infinite patience and persistence. As there is no struggle so severe and exacting as that which a man has to make with himself, so there is no victory so noble as that which a man wins over himself."

**The Highest Motive.** To be a good and safe citizen—a good man or woman—is to choose, determine, and act in accord with the best judgment, the purest motive. The highest motive that can influence ethical conduct is the desire to do right *because it is right*. But this motive is too high for most adults, and of

course would not serve as the basis of a very effective appeal to children. The lowest motive that can be used to influence conduct is *fear* in any form; but, because it seems temporarily effective, it is very often used. The expectation of "prizes" or "rewards of merit" is nearly as bad. The essential evil in the use of fear or any other motive that responds only to some external coercion or inducement is, that, as soon as the *external* influence is removed, right conduct becomes irregular, or ceases. The only effective and abiding cause of conduct is *within* the individual. It may be that fear or cupidity must be appealed to at times, sufficiently at least to set the child in the right path, but the higher motives should be used to keep him there.

**Direction for Will Training.**

The best general direction for will training may be stated thus: Use the highest motives to which the individual (or the school as a whole) can be got to respond; then use the advantage thus gained to create high ideals, which shall become standards of conduct. The proper cultivation of the motives (feelings) is of the highest importance in building moral character. It is by no means enough that we shall be taught *to know* right from wrong: such knowledge does not of itself prompt to right doing. We must also intensely *feel* about it,—feel the imperative of conscience especially.

Character is not fully established until right conduct has become *habitual:* will finds it easy to work along lines of least resistance. The teacher, then, must use every effort to convert right action into habit, in his pupils.

The general direction just given for character building through education of will, inv[illegible] education

of every other faculty; and every other faculty is, of course, concerned in the making of character, but the will is the director and executor. A man may be conscious of sound memory, discerning judgment, vivid imagination, and wholesome normal feeling, and at the same time be keenly conscious of an utter inadequacy due to deficient will power. This is simply another way of saying that boys and girls must be influenced to *use* the will for the attainment of high ideals, if they are to grow to self-reliant, integral manhood and womanhood.

Some form of affection or desire is usually the highest motive which can influence the conduct of children and young people. An enumeration and discussion of such feelings as are thought to be most effective have been given in Chapters X. and XI. But judgment, which in this connection may well be called the "rational motive," should early be set to work with imagination to form *standards* and *ideals* of conduct. Even young boys and girls will, of their own choice, do many things from a rational motive, because it is wise or right to do them, rather than from a mere desire for pleasure.

**Rational Motive.**

In the training of the young, permanency of environment, if the environment is at all good, is of the utmost importance. Too frequent change of residence, too much travel, too much sight-seeing, tend to weaken the influences that give stability and wholeness to character. And indeed it takes a strong, well-matured character to withstand frequent change of surroundings, frequent contact with different standards of conduct and different motives of action. In this fact is to be found part, at least, of the exn

**Environment.**

nation why a shifting population is apt to be more or less criminal.

**Other Aids.**

It is worthy of frequent repetition that the best means at the teacher's disposal for forming the standards and ideals of his pupils are to be found in history, biography, and literature. Through these, feeling, judgment, imagination, may all be reached and educated. The youth, by being brought to feel the same motives, build the same standards of conduct, and picture the same successes, as those of which he reads in biography or literature, will be caused to mold his own life after the ideals thus created within him.

**The Teacher an Example.**

The young are so imitative, usually unconsciously so, that the teacher should in himself exhibit high standards of right, lofty ideals, and firm *self-control.* The fussy, fuming, nervous teacher, frivolous, trivial-minded, and with varying standards of action, soon inoculates a whole school with these characteristics; while, on the other hand, the firm, even-tempered, self-controlled, judicial teacher communicates his own qualities to his pupils.

**A Philosophy of Living.**

The process of willing is intimately bound up with any philosophy of living. The best principle of life that the teacher can follow or weave into the habits of his pupils is, "Prove all things, hold fast that which is good," and bend an undeviating will to the doing of the best that you can do; and with that be content, not worrying or fretting. Thoreau says, "To dwell long upon one's errors and misdemeanors is to add to the offense. Not to grieve long for any action, but to go immediately and do freshly and otherwise, subtracts so much from the wrong."

This is in no way in conflict with the "divine discontent" which is and has been the mainspring of all that is best in human endeavor, of all most effective human willing. Pope was as psychologic as he was poetic when he wrote,—

> "Hope springs eternal in the human breast:
> Man never *is*, but always *to be* blest."

# CHAPTER XVIII.

## REPRODUCTION.

REPRODUCTION is *the operation which involves the creation of thought and the expression of thought and feeling in language and action.* The terms *language* and *action* should be extended to include the various forms of *art.* Painting, sculpture, and music are means of expression of the highest order. The painter, the sculptor, the musician, utter their ideas and ideals as truly as do the essayist, the orator, the poet.

**Definition.**

The comparison of mind activity with the bodily organism and functions may be briefly used again to illustrate this definition. To preserve the physical economy, food must be acquired and assimilated, — must be taken into the body after proper preparation, and there undergo such changes as will make it into new tissue. But all this is useless, unless there be some outward result of the inward assimilation, shown not only in increased vigor and capacity for work, but in the actual work done through this increased capacity. So the mind, in order to grow, must acquire knowledge and assimilate it, making it over into new thought, and building it into the personality and character of the individual. But this is profitless, unless there be *outward expression* of the inward activity in language and conduct. The

**Mind and Body compared.**

results of mental assimilation must be made outwardly manifest.

Creation. *Creation* has already been considered as the work of imagination, aided by judgment and other faculties. It is the connecting process between assimilation and reproduction. Its results are new concepts and ideals, new combinations of thought, new images, new standards, new purposes.

Expression. That these may be wrought out to fulfill the law of individual activity, and to have their effect in making or marring human happiness, there must be *expression*. We cannot know what a man's thoughts are, or his ideals or his character, except as these are made known to us through his words and acts. His true thought, his real character, may not be expressed always, but something that has been thought and felt within him shows forth in expression.

Three Forms of Expression. As there are three kinds of education, — physical, intellectual, moral, — with the corresponding forms of character, so there are three forms of expression, — physical expression, in which physical character is made manifest; intellectual expression, in which intellectual character is made manifest; and moral expression, or moral conduct, the outward evidence of moral character. It takes very little observation to discover that these three forms of expression are real and distinct.

Physical character is shown in the dress, in the carriage of the body, in ways of standing and sitting and walking, and in all things requiring physical activity for their accomplishment. Inefficient or defective physical character is expressed in stooping posture, slouching, uncertain gait, and poorly coördinated movements

of body and hands in any work demanding careful muscular adjustment. Defective mental character is also frequently indicated in some one or more of these ways, and in tone, gesture, and facial expression.

But it is rather in language and conduct that intellectual and moral character have their expression. The power to think vigorously and effectively is shown in the use of vigorous and effective language. Moral integrity is shown in honesty, truthfulness, purity, charity.

The outward expression also reacts upon the character to strengthen and fix it. Modes of expression become habitual, and it is easier for thought and feeling to find outlet through tracks already formed than to force new ones: hence the danger of letting any but the best forms of expression become habits. Expression should never be permitted to become wholly unconscious or involuntary; there is always the possible need of a changed form of expression to suit the growing character.

**Reaction of Expression.**

A specially valuable fact is to be noted in this connection; and that is, that, if one persists in forms of expression foreign to his natural character, the reaction will be felt in the awakening of thoughts and feelings corresponding to the expression. A timid man, if he will persistently wear the garb and adopt the carriage of a frontier desperado, will inevitably *feel* something of the swaggering bravado of his model. The habitual liar, if he will follow truth-telling rigorously for a time, will come to think less of lying. It is on the reaction of expression upon character that keepers of reformatories and prisons largely rely to work improvement in the character of their charges. If men are compelled to keep clean, to walk upright, to forego intoxi-

cants, to eat plain food, and to do *honest work*, the character of all but the most abandoned will respond to the changed forms of outward behavior.

All three forms of expression, as named above, demand psychic activity in greater or less degree. Even though some modes of expression have become habitual, they were once voluntary, and required conscious effort. The putting of thought and feeling into language and action involves judging, imagining, and willing.

No statistics have been taken on the subject, but there is good ground for believing that the majority of persons do much of their thinking in *concepts* rather than in *words:* most of their images and ideas are presented to consciousness unclothed in language. A distinct and more or less strenuous effort is necessary in finding language or other symbols for the exact expression of what is in the mind. There must be strenuous volitional directing of faculty and muscle, in all forms of art expression; and the work of molding thought into words suited to contain it makes exhausting draughts upon every faculty. Expression is, then, in every case, a real *operation of the mind.*

**Expression a Mental Operation.**

## Cultivation of Expression.

Although it is with intellectual and moral expression that the teacher, under present educational conditions, has most to do, yet he must concern himself, as much as opportunity and equipment allow, with the expression of physical character. He should be alert to discover, and to do what he can to correct, physical faults. He should be watchful of playground sports and games, since these betray both physical and mental tendencies.

He should sympathetically and intelligently direct some of the physical activity of both boys and girls, so that it may become a truer expression of right natural tendencies, and may react against evil character elements. When it can be afforded, there should be some provision of gymnastic apparatus, even if only of the simplest kind. This should be used to cultivate the physical character of every pupil. This idea is, of course, carried out now in kindergartens, colleges, and universities ; but it has wrought but little change in primary and lower secondary schools, and is almost unknown in country schools. This matter will be presented more in detail in the next chapter.

**Play and Gymnastics.**

The putting forth of thought and feeling is mainly by means of language, spoken and written; and the teacher must therefore address himself to the work of training his pupils to use language correctly, fluently, and naturally.

In the recitation the teacher has an opportunity, not afforded him at any other time, for testing his pupils as to the three kinds of character, and for cultivating their proper expression. In reciting, the pupil gives, for the most part unconsciously, evidence of defective physical and mental equipment, or of physical and mental integrity. A weak, drooping carriage of the body in sitting or standing is one of the commonest indications, at the recitation seat, of lack of physical tone. Pupils should be made to sit and stand with erect head and shoulders, and with back held straight. So commonplace a statement would not need to be made were it not so often disregarded. The recitation also affords opportunity to discover defects of sight and hearing.

**The Recitation.**

Quality of moral character will be shown in recitation by the pupil's accepting or rejecting "promptings" from his classmates; by his trying to conceal his ignorance from his teacher, or by his candid and full statement of his difficulties in comprehending the lesson; and in numerous other ways so well known to teachers of all grades. But it is not, of course, safe to take cheating or deceit in class as always indicative of the general moral condition of the pupil. Among students, almost from the primary grade up, there is a sort of tradition that it is not only not wrong, but rather the correct thing, to take what advantage they can of the teacher, and cheat him into a good opinion of their ability; and pupils will do this who would scorn to lie or cheat on the playground or in their social relations.

**Cheating in Class.**

At the same time, a tendency to cheat and deceive in the recitation indicates lack of correct standards of right, and the teacher should do all possible to bring his pupils to see the matter in its true light. Otherwise the pupil who lives by a double standard in school may easily grow into a man or woman living by a double standard in the world.

The best test the recitation affords is of the *intellectual* character. From the pupil's expression of thought in language, the teacher can judge of his power to observe, to reflect, to imagine, to will. It must not be forgotten that *expressing* thought is hard work, quite as hard work, often, as *making* thought. Therefore pupils are prone to clothe their ideas in rags and tatters of language, — half completed sentences, ambiguous phrases, and even slang, — with much poor pronunciation and far poorer enuncia-

**Some Difficulties.**

tion. In correcting and reforming the spoken language of the pupils, the teacher will have to labor against the powerful examples and associations of home surroundings, as well as against the habit and carelessness of the pupils themselves. In his efforts to correct their syntax and phraseology, he will even run counter to *sentiment* as well as to habits and associations; for among the masses of the people there is a feeling that correct expression is an affectation and a sign of foppishness. Strange as it may seem, many persons, both young and old, do not use as good language as they know, from fear of *ridicule;* but the most patient and persistent effort should be put upon the task of having each pupil express his thought, in recitation, in clear, concise, complete sentences properly pronounced and clearly enunciated.

It is unfortunately true that a majority of teachers seem satisfied if they can but get the pupils to give pretty good evidence of a knowledge of the lesson, and do not seem to care in what sort of *language* this knowledge is expressed. Other teachers seem to think they avoid the difficulty of slouchy language if they insist that the pupils shall recite in the exact language of the text-book. While this may in some cases be effective in securing proper expression, it is usually one of the surest ways to dull the originality of the pupil, and diminish the activity of every faculty but memory. To cultivate the power to express, it is not sufficient that the pupil shall be required merely to reproduce, by an act of memory, both the thought and the language of another; but he must make the thought his own by understanding it, and then forge it into *words* of his own

**Pupils must recite in their own Language.**

selection. It is the *pupil's* ability to express, that the teacher is concerned with, not that of the text-book writers. Therefore insist that the pupil shall *recite in his own language, that his sentences shall be correctly framed, and that his words shall be properly pronounced and distinctly enounced.*

What has been said so far, of expression training in the recitation, applies more particularly to oral recitations; but tablet and pencil should be a part of the equipment of every pupil as soon as he is old enough to use them, and should be used in nearly every recitation. It is by *writing* that *accuracy* of expression is best secured. There is no subject a part or all of the recitation in which may not be often *written* advantageously. There may be written recitations in spelling, reading, history, arithmetic, etc., in which the *aims* shall be the same as in oral recitations, except that accuracy of spelling, punctuation, paragraphing, etc., takes the place of accuracy in pronunciation and enunciation. Much written work in every branch, on tablet and blackboard, should be insisted on in all primary and secondary schools; and written work in various forms should be given a prominent place in the daily exercises of the college and the university, and all of it should receive from the teacher as critical an examination and correction of the *language* used as of the statements regarding the subject-matter. A student of biology, for instance, should have both the biology and the English of his paper criticised; and if his punctuation, paragraphing, spelling, syntax, and phraseology are not good, he should not be marked high, no matter how correct his biology may be.

**Written Expression.**

It was shown in previous chapters that there are

exercises and studies which are especially suited to the cultivation of the observational powers; others, to the cultivation of memory, etc. So there are studies whose effect, when they are rightly pursued, is to cultivate fluency and accuracy of expression. These are, named generically, language studies and art studies. In the kindergarten they take the form of songs, stories, drawing, and hand work with paper and clay. The individuality of the four-year-old may be expressed in these exercises as clearly as the individuality of the man or woman is in a book or a lecture. The music, drawing, and clay-modeling of the kindergarten are the beginnings in those forms of expression. Vocal music should form a part of the course of study in all schools, up to the college; and drawing should have a place in all curricula of formal education, no matter how extended these may be. Some skill in these forms of expression it is as much the business of the schools to give as it is to train in language or mathematics: an education is not an all-round education without them.

**Expression Exercises and Studies.**

**Music, Drawing, Modeling.**

In the work of the primary school, the increased power of the pupil should be brought into expression by more oral work than can be used in the kindergarten. There should be a definite period devoted each day to conversations between the teacher and the primary pupils, in which the talk should be free and spontaneous, on some subject of interest to the little people. The teacher's aim must be to secure (1) ready expression, (2) correct expression. Wrong pronunciation, slipshod enunciation, and bad syntax, should be quietly and sympathetically corrected. No

**Conversations.**

exercise of the school is more important than this conversation exercise; nor does any require more careful and ingenious preparation, or more skill in conducting it. If the teacher is not genuinely interested, and sincere, or is unable to quicken the interest of the pupils, the exercise will degenerate into a mechanical word-grind, in which there can be no real expression of the child.

As soon as the pupils are able to write with some readiness, simple composition exercises should be introduced. The first aim in such exercises should be to secure, as nearly as possible, automatic exactness in what may be called "mechanics" of written composition. By the time the pupil has finished the fourth-reader grade, correct punctuation, capitalization, and paragraphing should be done by him as automatically, almost, as the letters are made. Of course, while this precision is being acquired, and in order to secure it, the work of composition on paper must be made as *interesting* as possible, and the *mental* quality of the writing must be kept fully up to the pupil's rising level of power. The saying of Bacon is true, that "writing maketh an exact man," for there is no other exercise whereby *exactness* in expression can be so thoroughly attained as putting thought into *writing;* and it is lamentable that no other exercise is more neglected in formal teaching, in all grades of schools. There is not a week of school life, from the time the pupil can write at all to the time when he goes out with his university degree, in which he ought not, under a teacher's direction, to express on paper some of his best thought in the best language he can use; and this should be done not merely in his

**Composition.**

English course, but in *every* study. The cultivation of expression should no more be confined to a few lessons in composition, or left wholly to a professor or group of professors of language and literature, than the training of a pupil in courtesy, truthfulness, and honesty, should be confined to one set of exercises or be left to a "professor" of these virtues. *Every* class should be an expression class, *every* study should involve exercises in the putting of thought into written language. This idea is emphasized in the following quotation from the Report of the Committee of Ten: "It is a fundamental idea in this report, that the study of every other subject should contribute to the pupil's training in English; and that the pupil's capacity to write English should be made available, and be developed, in every other department."

In addition to the general exercises here indicated, there ought to be, of course, *regular class work* in English composition, both theoretical and practical, in all primary and secondary schools, and through the collegiate sophomore year, if not longer.

**Reading and Literature.**

Reading as an exercise in itself, and the study of literature, both indirectly and directly aid in the cultivation of expression. Through oral reading as a school exercise, correct pronunciation, enunciation, and inflection should be acquired; and in both reading and literature the *study of words* should have a prominent place. All words new to the pupil should be noted, defined, and, when possible, *used.* The study of words, their original meaning, their present force, and their synonyms, can profitably be made a special school exercise, from the fourth grade up. The dictionary is, of course,

indispensable in such exercises; and every pupil should, at the proper degree of advancement, be taught to use it effectively.

It is unfortunate that not more teachers are able to cultivate the voices of their pupils by proper exercise in oral reading; for the voice is, in tone and inflection, one of the chiefest means of expression, — as important, indeed, as language itself. But a cultivated voice is even more seldom heard than good oral reading or correct and fluent speech.

The study of literature furnishes models, the influence of which is effective in the cultivation of both oral and written expression. *Forms* of expression, and the combinations of words and phrases, should receive careful attention, for they constitute *style*,— that indefinable something which is the aroma of expression. The principal defect in the so-called study of literature in most schools is that it is a study *about* literature rather than a study of literature itself.

**Declaiming.**

Declaiming is simply reading without the book, and with a touch more of dramatic effect than oral reading demands. It is an excellent exercise if care be taken to save the student from falling into stilted and unnatural tones and gestures: *naturalness*, even though it be crude, is far preferable to any kind of artificial speaking.

**Debating.**

There can be no better exercise than *debating* for the cultivation of fluent and correct oral expression. It can be profitably introduced into the fourth-reader grade of the country school, and should form a part of the required curriculum of every school, all the way up to and through the university. There is no more reason why training in forensics

should be left to the students' "literary societies" than that the study of arithmetic should be left to a students' "arithmetical society."

Argumentative discourse is the best by which to cultivate readiness of expression, because it excites the *interest* of the participants as no other form of discourse can, and thus secures that sincerity and naturalness of expression without which no utterance is effective, and because it necessitates much *impromptu* speaking. Turning a subject over and over in the mind, studying its significance, and searching for language adequate to set forth this significance; the demand for readiness in rejoinder, for ability quickly to select the strongest words in which to frame replies to the arguments of an opponent, — all cultivate quickness and exactness of expression. These forensic drills should be under the sympathetic and skillful direction of a properly equipped teacher. It is certainly an excellent indication of the good judgment of many college faculties, that they are encouraging *debating* contests between students of different institutions, and are thus doing something to call attention to the fact that training in intellectual expression is at least equal in importance to leg-training in football bouts.

**Training in English.**

Secondary schools, and institutions of higher learning, are beginning to wake up to the fact that "expression crowns their work," and are casting about for satisfactory methods of making up for what has been and is a shameful lack. These words of Professor Hart go straight to the mark: "Failure in English should disqualify any one from graduation from any institution. We have no right to certify to the world as an educated person one who is unable

to express himself clearly and correctly in his mother tongue." And Dr. Brooks was wholly right when he said, "Better neither Latin, Greek, nor science than ignorance of the mother tongue."

No subject has received more discussion in the past few years than the question of how most effectively to teach English in American schools and colleges. Our institutions have worshiped the fetich of foreign languages, both dead and living, so blindly and so long, that to write and speak passable English is a rather rare accomplishment. The Committee of Ten deemed the matter of English expression of sufficient importance to demand the most thoughtful consideration of it; and the recommendations of this committee, in Bulletin No. 205 of the U. S. Bureau of Education, should be studied by every teacher.

**Summary.**

The operation of *expression* involves the highest activity of the mind, and requires the use of every faculty. The senses and memory put knowledge-material before judgment and imagination. These elaborate the material into new thought, and then clothe the thought with words, or put it into art forms. Expression, of course, requires that there shall be something to express: so acquisition and assimilation must precede expression. The mind must be stored with percepts and concepts; it must use judgment and imagination actively in combining these into new forms and ideals; it must be attuned to feel beauty and righteousness. Then it may seek the power with which to utter forth its thought and feeling in winged words, in marble or bronze, on the quickening canvas, or in the imperishable harmonies of sound.

*Expression is the teacher's test of his own failure or*

*success.* Do his pupils show increased physical health, greater power to think, and to say and write what they think, and a sturdier moral nature, than when they came to him? If so, his teaching has been effective; if not, he has failed.

The power to express is also the test of success in the practical affairs of life. He who can most quickly marshal his thoughts, and send them forth in words filled with meaning, and electric with the force of mind, is *master*, and sways the multitude as he wills, whether he writes in the closet, or speaks in the forum. And he who speaks to mankind through *art*, expressing for them their purest ideals and aspirations, has always been called divine.

# CHAPTER XIX.

## APPLICATIONS OF PSYCHOLOGY TO FORMAL EDUCATION.

THE attempt has been made in the preceding chapters to show why the teacher needs psychology, and how he can make it of service in his daily teaching. In this chapter it is designed to revert again to the definitions previously given of education and teaching, and to show the necessary and vital connection which a knowledge of mind has with the whole science and art of education. A system of formal education will be set forth which will serve as one of many attempts now being made to use what is known of mind and mind growth as the basis of human development by the consciously directed agencies of the school, the college, and the university.

There are many questions connected with the organization of the means of formal education, the answers to which must be sought more or less directly in psychology. All of these fall within the wide domain of sociology, for sociology includes all questions the right solutions of which make it easier for man to live a human life. And sociology must come to psychology with all other questions, as well as with those concerning the best ways and means of education.

Education, as to its specific sociological purposes, may be divided into *formative* and *reformative*. *Forma-*

*tive* education is that of which the purpose is to develop and train the young and unformed body and mind to right functioning. The object is the *formation* of character.

**Formative and Reformative Education.**

*Reformative* education is that of which the purpose is to take those who, by reason of heredity and environment, are *deformed* in character, and try, by specially devised methods, to win them back to right living, right thinking, right willing. The object is the *reformation* of character.

**Reformative Agencies.**

Many different agencies have been organized for this work by those who feel that to provide for this sort of education is as much the duty of society as to provide for the *formative*. Among these agencies are reform schools, reform farms, college settlements in the slums, houses of refuge, and special systems of management for prisons and for asylums for the insane. The central idea in each of these is the necessity of getting the child, the man, the woman, to understand that liberty in a human community can be enjoyed only on the conditions of *honest self-support*, and *intellectual* and *moral self-control:* hence all means are used to quicken the motives, to strengthen the will, and to give the individual the power and the skill to make a livelihood. Of course, if intellectual or moral obliquity rests upon physical disease, this must first be cured or ameliorated. Further discussion of reformative education lies outside the province of this book.

## Some Problems Stated.

The chief problems of formative education may be generically grouped under these three heads: (1) the organization of *educational forces* and *appliances;* (2)

the organization of the *individual school;* (3) the *administration* of the school to secure the aims of its organization.

In the first are involved such matters as the right relation of the community (state or nation) to education; the mutual relations of the primary and secondary schools and the institutions ranking above them; the place of professional schools in a state system; the relations of the state to private educational institutions; the teaching of morals and religion in public schools.

In the second are involved the kinds of studies, their relative values, their proper order in the several courses, and the correlation of these courses.

In the third belong school management and methodology.

The results of the inquiry as to what part psychology plays in the solution of the more important of the questions above given are put forth tentatively and with no feeling of finality or dogmatism, but with an earnest desire to aid in the establishment of something definite in educational philosophy.

**The Right of the Community to Educate.**

Has the community, whether organized as city, state, or nation, a right to establish and maintain a system of schools by public taxation? In reply to this, much may be said *pro* and *con;* but almost all civilized countries, and some half-barbarous ones, have already given the question a practical affirmative answer. Never in the history of the world was the idea of universal public education so prevalent as it is now.

A part, at least, of the explanation of this, may be found in the fact that an organized human community has, in a true sense, a *psychic* existence which is a com-

posite of the psychic lives of the individuals. When we speak of the "German type" or the "American type," we mean not only the physical characteristics (form, feature, stature, etc.), but we mean also the mental peculiarities — the ways of thinking, the ethical standards, the expression of the inner life in literature and art — that mark one nation as differing from another.

There is a psychology of the nation as well as of the individual, — a truth which some seem prone to forget, who would have us in America adopt German, or French, or English systems and methods of education.

But there is, in a still closer sense, a psychology of society as an *organism*. Society is a growth with its own vital and psychic laws. This fact which has received especial recognition from Spencer, must be taken into account in tracing social changes and progress.

**Society an Organism.**

As the individual man has added to his safety and prolongation of life by increasing his intelligence, so the social organism gains safety and permanency from an increase of the general social intelligence.

It took the shedding of much blood to teach this truth fully to two of the most enlightened nations of Europe. Now, both France and Germany show by their thoroughgoing provisions for popular education, that they believe a soldier can fight better with brains and bullets than with bullets alone, and that obedience to law is more readily yielded from within the individual than it can be coerced from without.

In a republic the necessity of universal education is greater than in a monarchy, because in a republic power lies in the hands of all citizens, and power without knowledge is eminently dangerous.

To the question, then, whether the community has a right to establish and maintain agencies for general education at public expense, the answer must be a strong affirmative; because in the state, as in the individual, education means increased intelligence, higher standards, purer patriotism, and a quickened conscience. The state educates its citizens in order to secure its own safety and permanency. Self-preservation is the first law of states as of individuals.

The *external* organization of a state system of education is work for the legislator: the *internal* organization is the work of the educator, and should be based on a sound psychology. Since the internal organization of a system is inseparably connected with the organization of the individual school, both will be discussed together.

**Organization of Educational Forces.**

The definition of education offered in the Introduction calls for the "preparation of the individual in physical, intellectual, and moral capacities," and such education the state must provide. The primary object of state education is sound citizenship, and this can be secured only by educating for sound manhood and womanhood. This definition of education is in accord with the modern dogma that "the whole child must go to school." But, although this saying has become worn from much use, it can hardly be doubted that it is fully carried out in only a very few schools of any grade.

## Physical Education.

Healthy, continued activity of mind depends upon sound physical development and growth. There is a direct ratio between mental wholeness, and good lungs, nutrition, and muscular exercise. Proper provision

should therefore be made in the individual school, and in every system of schools, for *physical* education.

It is rare to find, even in the wealthiest public or endowed colleges and universities, adequate provision for physical training: in the primary schools there is almost none, beyond a few simple marching and calisthenic exercises. In the country schools this lack is, fortunately, largely made good by the outdoor life of the pupils, both at home and at school, which affords opportunities for outlet in right directions, of the natural activity of the boys and girls.

**In the Country.**

But even in the country school there is need that the teacher should use well-planned methods of giving his pupils some definite physical training. An important part of his duty is to prevent *over-exertion* and the too constant exercise of any particular set of muscles. Every country teacher will readily realize the necessity of such control over the tendency of his pupils to take up some game and play it day after day until both pupils and game are worn out.

At the beginning of school the teacher should carefully note such pupils as betray any physical weakness, and in every way possible secure their *interested* participation in those sports and games that will bring into activity the defective muscles and organs. Children's plays may easily be classed according to the particular sense organs or set of muscles they are best suited to cultivate; and, in addition to the usual games, special exercises may be devised by the observant and sympathetic teacher, to supplement the spontaneous play. He should be on the playground at every general intermission, to direct, control, and inspire *physical* activity,

as he directs, controls, and inspires *mental* activity in the schoolroom.

**In the City.** In towns and cities the problem of proper physical training is not so easily solved as in the country, and will not be until boards of education come to see the vicious stinginess of cramped schoolhouses and schoolyards. Good ventilation and lighting, hygienic seating, and sufficient room for outdoor exercise, should be secured, at whatever cost of mere dollars; and to these should be added a more or less complete equipment for gymnastic training. In the larger cities the gymnasia should be under the direction of a specialist and a corps of trained assistants. A little less money for dead languages, and a little more for living lungs and muscles, would be a good thing in many city school systems.

**In College and University.** The college and university should provide fully equipped gymnasia, and make physical training a requirement for all students. As each student matriculates, he (and she) should be measured, weighed, and otherwise tested physically, as he is tested mentally in entrance examinations. Upon the results of this physical examination should be prescribed a gymnasium course.

The contrast between an intelligently directed gymnastic course and the usual athletic training a young man gets at college, lies in the fact that in athletics those who *do not need* the training get it, while in the gymnastic course each student gets exactly the kind and amount of exercise he needs for his all-round physical development. If the modern idea of education is to be wrought out, a college student should no more be permitted an "election" in athletics or other

forms of physical training than he is in his intellectual studies.

The methods of physical training briefly set forth above are for the general development of the whole body; but there is another kind of training, partly physical, partly mental, which cannot be neglected if the "whole child" is to be educated. *Manual training* — or, as it is termed by some, *manu-mental* training — is now almost universally recognized as an indispensable factor in a complete education.

**Manual Training.**

There are two reasons, either one of which is sufficient, why it should have a place in public schools: (1) because it is the business of public education to prepare the pupil to live as a self-supporting citizen in a community of his fellows; (2) because through hand training the mind can be developed more readily and effectively than without it.

To be self-supporting, a citizen must have the ability to make an honest living. The majority of citizens in any community make a living by use of *hands* and brains, rather than by use of brains alone; that is to say, most people earn a support by manual labor rather than in purely intellectual pursuits. It is, then, at least as much the duty of the state to provide hand training as it is to provide mind training. Manual training seems to be one of the surest means of making education truly *democratic* rather than aristocratic: it provides for the needs of the many, not merely for the culture of the few, and it *dignifies manual labor.* The indictment often brought against the schools of every country is, that they increase the army of the discontented by cultivating the intellect and the capacity to feel, without proportionately training either mind or hands to skill in providing for increased wants.

The excellent results attending the introduction of manual training in some form into many kinds of schools seem to close the argument regarding its effectiveness as a means of quickening intellectual activity. According to reports from different schools, the purely intellectual work of those pupils who receive manual training is done in much less time, with greater zeal and more thoroughness, than it was before manual training was introduced. These results are in accord with the teaching of psychology, that the mind is stimulated and energized from without inward, through its innate *creative* tendency and its interest in *things*.

The idea not to be lost sight of is, that manual training means *mind* training through the hands: training of the hands themselves is the means, rather than the end, in a scheme of general education.

### INTELLECTUAL EDUCATION.

Although *intellectual education* has been provided for among civilized peoples for two or three thousand years, even a cursory study of history will show that it has not been made to include, until quite recent times, either the masses of the people or all the intellectual capacities of the individual. Now the fact is recognized and emphasized in every modern system of education, that the poor and the rich, the hand laborer and the brain laborer, alike have a right to intellectual development and culture.

And it has come to seem axiomatic, that *all* the intellectual powers should be developed and trained. One time, not so long ago, it seemed to be thought, that, if *memory* were sufficiently developed and crammed, the duty of the educator was fully done; and most teach-

ing proceeded on the idea, that, if the memory could be sufficiently filled with facts, the culture of the whole mind would somehow follow.

It is now recognized that not only should all the powers of the intellect be cultivated, but that they should be cultivated in that order which the best psychological investigation has shown that they follow in natural development. The order of this development, and the relative intensity of the three groups of mind activities, at different ages, are illustrated by Diagram 1. It is to be regretted that there are not enough statistics at hand to enable the lines to be drawn as exact maxima and minima.

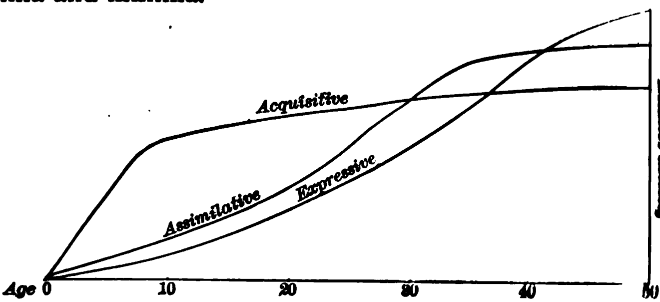


Diagram 1.

On the base line of the diagram are indicated the successive ages of childhood, adolescence, and maturity. The curves show the *relative* development of the acquisitive, the assimilative, and the expressive powers, at different periods. It would not be far from the truth to say that not only *relatively*, but *absolutely*, more knowledge is acquired in the first twelve years of life than in any twelve years thereafter.

The assimilative powers reach their maturity after the acquisitive, and somewhat earlier than the expres-

ive, and all are capable of the highest activity in the "middle years of life." The diagram is intended to indicate the *relative activity* of the mental powers, and not the actual amount of work done by them; for the quantity of knowledge-material gathered by the acquisitive powers is always greater than can be fully assimilated, and more can be assimilated than can be expressed.

In accordance with these facts, provision should be made for *acquisitional* exercises and studies during the first eight years of school life, assuming the child to be four years old when he enters the kindergarten; for *assimilational* exercises and studies, from about the beginning of the high school year, through the college; and for *expressional* studies and exercises, from the freshman year in college, through the university course.

**Relative Emphasis.**

It must be clearly understood that no attempt is made here to draw any hard-and-fast line of demarcation between mental powers, school years, or studies. It is simply meant, that, during the first years of school life, emphasis should be laid on acquisitional studies; during youth, assimilational exercises should be made prominent; and in early adult life, the expressional studies should receive the emphasis. All three kinds of studies and exercises should, of course, be carried on *concurrently*, even in primary schools; but one kind should occupy the larger place in the curriculum at one time, another at another time. The proportionate stress to be put upon the different classes of studies in the several grades of advancement is approximately indicated by Diagram 2.

In this diagram, on the base line, are marked off the several agencies of formal education. The curves show

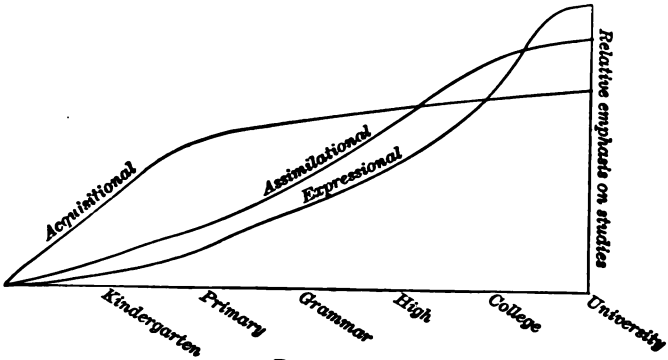


DIAGRAM 2.

the relative emphasis put upon the different classes of studies in the various grades of schools.

According to the definition given in Chapter I., teaching consists in *instructing, developing, training.* These three things, consciously done by the teacher, correspond severally to the three operations of the growing mind. Instructing (giving information) corresponds to *acquisition;* developing (increasing power) corresponds to *assimilation,* for there can be no growth or gain in power except through assimilation; training (resulting in skill) corresponds to *expression.* Primary studies and exercises, then, and the work of the primary teacher, should be planned in the main, for instruction, to furnish the pupil with abundant knowledge *suited to his capacity to retain and assimilate.* The actual amount of instruction given should not only not be diminished, but increased, in the secondary school and college; but relatively there should be much more study and teaching designed to *develop* the mental powers. So, while the quantity of assimilational (developing) work increases through the college and university, the amount

of *expressional* studying and teaching should be large in the college, and even in the high school, and should reach a maximum both relative and absolute in the university or professional school. Diagram 3 puts these statements in graphic form.

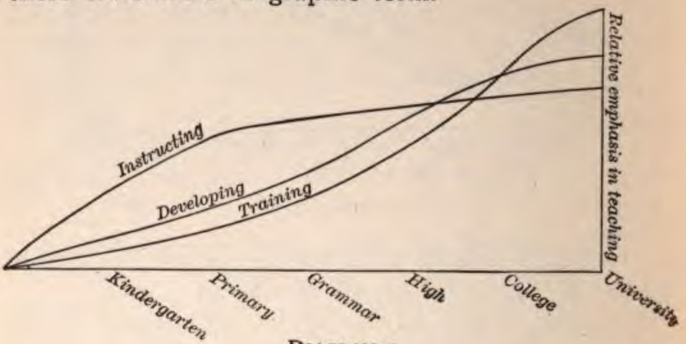


DIAGRAM 3.

## MORAL EDUCATION.

Although the need that the school should educate morally as well as intellectually has long been recognized, and various attempts have been made to supply that need, yet the matter of ethical training and character building has never received so much attention as now. To-day it is generally agreed that ethical education is of the first importance. The experience of the past half century has shown that intellectual education alone does not make upright men and women, nor does it relieve the congestion of prisons and reformatories.

Nor has intellectual education *plus* a revived physical training effected more than intellectual education alone, in the improvement of moral character: indeed, some of the many physical-education fads, both in and out of the schools, may be said with truth to be having

a contrary effect. Moral education must be added to bodily training and intellectual cultivation, in order to secure a sound and sturdy moral growth.

The general method in moral education is the same as in intellectual: there must be instruction, development, training. Ethical facts must be placed before the pupil: he must perceive and feel their significance, their relations to him; and the will must be habituated to prompt determination and execution.

**Method in Moral Education.**

The question whether there should be specific *religious* teaching in public schools will probably continue to be partially answered by legislation in some communities, by popular sentiment or prejudice in others. The answer psychology gives, is that right moral education and sound intellectual education are inseparably bound up together; the religious nature is a very real part of the mental life of the human being, and therefore its cultivation is necessary to a well-rounded education.

Psychology also plainly shows that in the moral education of the young the *here* and not the *hereafter*, deeds and not creeds, should receive the emphasis.

## SUMMARY.

What has been said in the preceding pages of this chapter is graphically expressed in Diagram 4 (p. 258).

The left-hand vertical column shows the stages of formal education, beginning even in the home, and extending through the university. The figures in this column indicate the average ages at which each stage is entered and left. The writer believes that a proper organization of the individual school will enable each stage above the kinder-

**Explanation of Diagram.**

| | Acquisitional. | | Assimilational. | | Expressional. | | | Development. |
|---|---|---|---|---|---|---|---|---|
| | SCIENCE. | HISTORY. | MATHEMATICS. | PHILOSOPHY. | LANG. AND LIT. | ART. | PHYS. CULTURE. | |
| 0—3 The Home. | Senses developed and trained by objects. | Stories told and read. | Number work, oral and written. | Formation of physical, intellectual, and moral habits. | Talking and reading. | Modeling, drawing, singing. | Plays and calisthenics. | Instruction. |
| 4—5 Kindergart. | Observation exercises. | | | | | | | |
| 6—9 Primary. | Nature study begun. | Leading events made familiar. | Fundamental operations made plain. | Distinctions of right and wrong. | Language lessons. | | | |
| 10—13 Grammar. | Nature study, simple experiments. | Narrative history and biography. | Arithmetic, algebra. | Morals and conduct. | Language lessons and composition. | Modeling, drawing, color work, music. | Gymnastics. | |
| 14—16 High Sch'l. | General science. | Civics, general history. | Algebra, geometry. | Practical study of ethics. | Grammar, rhetoric, literature. | Manual training. | Prescribed gymnasium exercises. | Training. |
| 17—20 College. | Special sciences. | Growth of civilization, sociology. | Geometry, trigonometry, analytics, calculus, etc. | Psychology, logic, theory of ethics. | Literature, classics, ancient and modern literature | Laboratory and studio work. | Prescribed athletics. | |
| 21—23 University. | Medicine, technology, original research. | Law, politics, original research. | Applied mathematics, pure mathematics. | Theology, pedagogy, metaphysics. | Philology, authorship, literary criticism. | Mechanic arts, fine arts. | Outdoor sports. | |

DIAGRAM 4.

garten to be *shortened* a full year. The columns covered by braces show the three main groups of studies and exercises,—the acquisitional, the assimilational, and the expressional,—with their subdivisions. The right-hand column indicates that the earliest work in every branch is, on the teacher's side, largely instructing; that between the grammar school and the university it is largely developing; and that through the university it is training. When the child enters the primary school, he knows a *little* of everything; he knows something of science, of numbers, and of language and the humanities. It is the business of the school, all the way up, to use what the pupil knows as a means of interpretation and correlation of what is unknown and unfamiliar.

Up to and through at least the first half of the college course, the aim should be a general education,—instruction in the principal elements of human knowledge, development of all the powers of body and mind, and some general training. During the last half of the college course, the student should be allowed to specialize somewhat, in preparation for the work of the university. In the university the work should be mainly in some chosen specialty, wherein *training*, the cultivation of skill in some particular thing, should be the prime object.

**Chronological Order.**

Psychology shows, then, that in arranging the courses of study in a system of schools, there is a *chronological* order to be followed, based not only on the fact that *mind grows*, but on the deeper fact that it grows by the development of different powers at different times and at varying rates.

For the same reason, a chronological order should be observed in the arrangement of the curriculum of the individual school. In the first third of the course,

acquisitional studies should predominate; in the second, assimilational; and in the last third, expressional.

Concurrent Arrangement.

But there should also be, in the individual school, a *concurrent* arrangement; that is, an arrangement which provides for the pursuit of the three kinds of studies *at the same time*. This is simply a restatement of the proposition, that though at one stage of formal education acquisitional studies should receive the main emphasis, yet the assimilational and the expressional should receive due attention also. Approximately stated, in the primary and grammar schools the proportionate division of time would be, to acquisitional studies one half to two thirds, to assimilational and expressional together one third to one half; in the high school and college, to assimilational studies one half to two thirds, to the others one third to one half; in the university, to expressional studies one half to two thirds, to the others one third to one half.

A division of work corresponding to the tripartite manifestation of the mental energy ramifies still more minutely into the exercises of the school. Every study presents new facts, new ideas, new words, for the student to *acquire* and *assimilate;* and he should be required adequately *to express* his own thought about these, in his own language. And in assigning each lesson, the teacher provides a definite amount of subject-matter to be acquired and assimilated, and should carefully test the result of the pupil's study by his expression in the recitation.

## CONCENTRATION.

By the term *concentration* is meant, in modern pedagogy, the relating and unifying of the subjects in a

course of study, and of the facts in the mind of the learner.

Tompkins admirably expresses the idea in his definition of the correlation of studies: "Correlation, then, is putting such subjects side by side at a given time in the course as will help to bring to view the universal relations involved in the study of any one of them."

It has been repeatedly emphasized throughout these pages, that no fact standing alone is valuable, that only as its relations to other facts are perceived can it be understood and made of use. This truth must be kept in mind in arranging every course of study, in planning every exercise, in conducting every recitation.

**No Subject Valuable alone.**

No subject should be taught as complete or valuable in itself: the mutual relations of all subjects should be constantly pointed out and illustrated. The value, in the practical affairs of life, of reading, spelling, writing, and arithmetic, should be shown to the beginner by numerous illustrations; the young student of geography, history, and civics, should have made plain to him their interrelations, and their practical value to the individual and to society. In more advanced work, the usefulness of mathematics in every field of investigation, the utility as well as the beauty of the natural and experimental sciences, should be clearly shown; and every student of the modern or classical languages should be led to see and enjoy the close kinship of language, literature, logic, and philosophy.

**Application to Recitation.**

No recitation should be conducted as complete in itself: each lesson should be fitted on to what has preceded and to what is to follow. Each recitation should begin with a brief review of

what has been gone over recently, and should close with a "preview" of the next work.

It is a fact, noted often by the observant teacher, that a pupil is not able to apply his spelling-book knowledge of spelling when he comes to write a note; that he may be excellent in text-book arithmetic, but very poor in the solution of practical problems outside the book; that he may make perfect recitations in the geography class, but be unable to locate the places he reads of in history. Concentration, or correlation, is necessary, not only because facts must be related in consciousness in order to be *understood*, but also because they must be related in order to be *retained* and *recalled* by memory. It was shown in Chapter VII. that the laws of association, or memory, may be all comprehended under the one law of *relation*. "Ideas, just as soldiers, need to be mobilized speedily in order to meet a specific demand;" and the "mobilization" of ideas depends on their being related. To be educated means, for one thing, to be able to summon all one's knowledge in any given case, and to summon it quickly.

**Concentration an Aid to Remembering.**

The student's comprehension of the interdependence and interrelation of all branches of knowledge will, of course, depend in very large measure upon the kind of teaching he receives. In this truth lies an evil of what is called "departmental teaching," by which is meant teaching by specialists, each employed to teach but one branch. The specialist — whether a teacher of drawing or music in a system of city schools, or a delver into the minutiæ of some subject in a university — is too prone to know no branch and value no branch but his own, and there-

**Departmental Teaching.**

fore to make no attempt, in teaching it, to relate it to any other.

Although, as said above, concentration depends largely upon the teacher, yet a great deal may be done through a well-arranged text-book to show the connection of subjects of study, especially in the lower grades. One very valuable book, for instance, shows the teacher how to combine number work and nature study, and it has been suggested that the idea narrowly applied in this book may easily and successfully be carried further, and that, in the primary grades at least, all the matter suited to a certain grade may be put into *one book*, thus securing the teaching of the different branches in their proper relations. Such a text-book would be welcomed by the inexperienced teacher, who could use it to much advantage; and the skillful teacher could use it at least equally as well as he can use several different books.

**Concentration in the Text-Book.**

## SCHOOL MANAGEMENT.

As psychology furnishes the principles by which any consistent arrangement of educational systems and school courses must be made, so it also furnishes the principles of a rational and effective administration of the individual school as a whole, and constitutes the basis of a scientific methodology by which the work of teaching may best be done.

The elementary principles of school management have been somewhat emphasized incidentally at various points in the preceding chapters, and but little more need be said here. The basic principles by which the organization of a school is made effective

are essentially the same for the university as for the kindergarten. The fundamental factor is *interest*; and the primary principle, including all others, which addresses itself to the teacher, whether the leader of a kindergarten game or the president of a university, is, "Secure the *interested activity* of your pupils, and their *sympathetic coöperation* in the work you are trying to do for them." If this be done, no "discipline" will be necessary. To act in accord with this principle is for the teacher to be *genuinely interested* himself, and to make his pupils feel that he is working both *for* and *with* them, with common aims and purposes. The worst thing that can happen in school administration, is for the teacher or faculty and the students to become *polarized*,— mutually antagonistic in aims and methods. It is true in a college or in a country school, that, when the *esprit de corps* of the students is aroused against a faculty or a teacher, the result is destructive of all true growth and good order.

The detailed discussion of effective school administration falls within the department of pedagogy generally called "school management," a science and art necessarily based largely on psychology.

Another department of pedagogy is methodology. This will receive general treatment in the following chapter.

# CHAPTER XX.

## METHODOLOGY.

TIME was when the teacher and his employers were content if he knew the "three R's" moderately well. But the idea, once almost universally prevalent, that knowledge of the branches to be taught is all that is necessary to the equipment of a teacher,—that *to know* a thing is to be able *to teach* it,—is now held only by the uninformed.

**Knowledge alone is not enough.**

One who knows arithmetic thoroughly is not necessarily able, by reason of that knowledge, *to teach* arithmetic well. Skill in teaching grammar is not a consequence of a sound knowledge of grammar.

Nor is ability to teach made up of a thorough knowledge of subject-matter *plus* a knowledge of the modes of growth and the operations of the mind. A man may have full and exact knowledge of anatomy and physiology; he may, in addition, know the character and specific effect of every drug in the pharmacopœia; and yet he may be utterly unable to diagnose a disease, or prescribe the proper remedies. To be a physician, he must know not only the anatomy and functions of the bodily organs, and the effects of drugs and ways of living, but he must also know *how* to diagnose and prescribe, how and when to apply the remedies that will cause a diseased organ to react into normal functioning, or prevent its becoming abnormal.

The teacher must know the three M's,—Matter, Mind, Method. To knowledge of the subject-matter, and knowledge of mind and mind growth, he must add knowledge of how to bring subject-matter and growing mind into such contact as shall cause mind to react normally on knowledge-material, and to acquire, assimilate, and express.

A teacher with good method and limited knowledge will do far better work than one with full knowledge and poor method: *without method* he is not a teacher at all, no matter how much subject-matter he knows.

**The Value of Method.**

Dr. Laurie says, "The doctrine of method is the last chapter in the theory or science of education, and the first chapter of the art or practice of education." The practical value of methodology cannot be better stated than in two more of Dr. Laurie's crisp sentences: "It is necessary to instruct according to method, if our instruction is to be sound and sure, and, above all, if we are to train and discipline mind. And this is the point to emphasize, that training and discipline are greater than knowledge, and that *only by sound method* can we train and discipline faculty."

**Method more than Matter.**

A legitimate inference from this is, that to secure that development and training which it is the business of a general, as distinct from a special, education to give, the *method* of teaching is of more value than the *matter* of instruction. And this is true, provided the matter of instruction, whatever it is, is suited to the *advancement and capacity* of the student, and furnishes stimulus and nutriment to all the mind's activities.

The *manner* of knowing is, within these limits, of more value in mental growth than the *things known.*

For knowledge to be valuable, either from the utilitarian standpoint or from the culture standpoint, it must be not merely *known*, but must be correlated, classified, and interfused and illuminated by the personality of the individual knowing it. The highest value of knowledge, or its worthlessness, is in this *tint of personality* which is the essence of the manner of knowing.

It is not intended here to enter the discussion of the relative value of different subjects in a general education; but it is simply meant that the value of whatever is studied in a general curriculum lies more in the manner of learning and knowing than in the knowledge itself.

**Method and Methods.**

The manner of knowing depends greatly upon method in teaching. But the distinction between *method* and *methods* is too frequently ignored, not only by critics of pedagogical science, but by teachers themselves.

By *method* is to be understood that body of principles, drawn from a sound psychology, which are applicable to all teaching; by *methods* are to be understood the special plans and devices to be used in teaching a particular branch or subject.

The teacher who has no sure foundation in method is prone to "run to seed" in methods, and will almost certainly fall into a mechanical routine of petty devices that are as far from real teaching as was the old memory cram. A weakness of many normal schools has been, that they laid more stress on methods than on method.

Method is obtained mainly by induction from psychology and intelligent experience; methods are deduc-

tions from method, to be applied to particular cases. Thus from general method we may deduce a special method of teaching science, and still further specialize it for physics, or chemistry, or botany. There is a general method to be followed in mathematics, but different special methods in arithmetic and algebra.

Not only has each branch and subject its own methodology, but there is a special methodology for recitations, for reviews, for examinations; and instructing, developing, training, — each has its own characteristic method.

**A Methodology for each Branch.**

The teacher must rely more on method than on devices; and after deducing a special method, he must, in practice, constantly modify his deduction by a knowledge of the new or unusual factors presented by any given problem of teaching.

It is only with general method, and perhaps a few of its more important special applications, that this chapter deals.

## Psychological vs. Logical Method.

The first fact which the teacher needs to get firmly in mind, and to keep aware of in all his teaching, is that the logical order of development of a subject is not always, not even often, the psychological order.

The beginner must be taught to read before he knows the alphabet or can spell: short sentences and words mean something to children, letters do not. Yet a logical method would require the letters to be first learned, their combination into words next, and last of all the building of words into sentences.

To teach arithmetic logically would be to begin with the abstract ideas of unity and number, and from these

to unfold all number relations and processes. To teach arithmetic psychologically is to begin with concrete things, and show how a number of objects may be increased and diminished.

The logical teaching of geography would begin with the form of the earth, its imaginary and real divisions, and proceed from these to the description of the various portions of land and water, and the different peoples using them. Geography is taught psychologically by beginning with simple forms of land and water and phenomena of the atmosphere, that are familiar to the child, and leading him to understand, through these, the larger land and water forms and the more complex phenomena of the earth and air.

**Illustrations.**

History should be taught to the beginner mainly in the form of biography and stories, rather than in chronological narrative. Civics should begin with the simple facts of home government, and be developed from these through the school and the local community.

A logical presentation of physiology would begin with the cells and tissues of the body, and trace their combinations into organs and systems. But it would be unwise to teach the subject in that way even to mature pupils: tissues and cells should be the last things studied. The same statement applies also to botany and zoölogy.

All subjects should be introduced, when possible, by means of objects; for, psychologically, progress is from the concrete (the visible and tangible) to the abstract. All first knowledge comes by way of the senses, and this fact shows the necessity for objective teaching. Things must be seen and handled before their abstract relations can

**From Concrete to Abstract.**

be perceived. Many concepts of concrete things must be gained before there can be any abstract notions formed of beauty, utility, or deeper relations.

**Things before Symbols.**

The child thinks in things and their images before he can think in symbols. The concept of six things, for example, must be formed before the idea of six as an abstract number is possible. A thing or its picture must become familiar before the word symbolizing it can be understood.

The teacher must be on guard in his use of the object method, however, lest he habituate his pupils to depend too much on objects or pictures. If an abstract line of thought is to be followed, the pupils must be made to *think* it (not *thing* it) through.

The principle into which all this may be generalized is, *The mind learns by passing from the near, the familiar, the concrete, to the remote, the strange, the abstract.*

In working by this principle it is necessary to remember that the act of learning involves two operations of the mind,—acquisition and assimilation. The distinction between these as processes of learning has, it seems, not always been kept in view by those who have discussed method in teaching.

**Learning involves Acquisition and Assimilation.**

The mind's activities are so blended with one another that it is not possible to draw hard-and-fast lines between its operations or the methods by which they are carried on. Acquisition and assimilation go on together in the minds of children before they reach school age. The mind begins to assimilate almost as soon as it begins to acquire.

But the general truth may be laid down, that the

method of acquisition is *analytic*, going from wholes to parts. The child and the adult alike acquire facts, primary ideas, words, as *wholes*. A first impression is a general one: the mind is not conscious at first of the *details*. A new sight, a new sound, a new taste, are all perceived as wholes, without reference at first to their elements or minor characteristics After we have grown somewhat accustomed to a sensation, a feeling, an idea, as a whole, we begin to analyze it into its parts or attributes.

**Acquisition is Analytic.**

## ANALYTIC METHOD.

Corresponding to the analytic process of learning is the analytic method of teaching. A good illustration is the sentence method of teaching reading. Short sentences, preferably made by the children, are written on the blackboard, and seen and read as wholes. After the pupils become familiar with a number of such sentences, and can read them easily, they are analyzed into words, and the words into sounds and letters. In elementary grammar, the parts of speech are given before any attempt is made to present their modifications and properties.

It is necessary for the teacher to bear in mind the fact that what is to him a *part* may be to the child a *whole*, and a whole too large to grasp. Parts and wholes are relative. The earth, considered with reference to its geography, is a whole; with reference to the solar system, it is a part. To the child just learning to talk, a *word* is a whole; to the same child, when a little older, a *sentence* is a whole, and the words are parts.

In instructing, therefore, the teacher must be con-

stantly careful to ascertain what concepts the pupil can grasp as wholes, and present those first. He must know not only *how*, but *when*, to give a new idea to his pupils. The different ways in which physiology, for example, should be presented to pupils of different ages will illustrate the last two statements. To the child of six or seven, the names and uses of one organ at a time are given, as head or hand: to the more advanced students, an outline view of the whole body should be given first. The child comprehends the hand as a whole, the older pupils can grasp the concept of the body as a whole. The method of teaching is in both cases analytic.

**Illustrations.**

United States history is taught in primary grades by stories and descriptions of persons and places. In the higher grades, the subject should be presented so that in the *first lesson* the pupils will get a bird's-eye view of the whole, by periods or epochs. The difference lies in what shall be presented as wholes to young children, and what to older pupils.

But no matter how advanced the pupils may be, it will be found best in every case to present a new subject by giving them a general view of the whole of it first. Any student can work better on details if he has some notion of the general content of his subject. We can follow a road with better heart and more active step if we know in what direction and to what good end it leads.

Analysis precedes assimilation. A thing must be examined with reference to its parts and attributes before we can perceive its relations to other things, and give it a correct classification. But the essential act of conception, which is the first

**Assimilation is Synthetic.**

step in assimilation, is a *synthesis*. To form a concept, several attributes must be put together: to form a class, several objects must be put together.

To assimilate, to understand, is to perceive relations between things; and the perception of relations consists in, or at least results in, the synthesizing of two or more attributes. When a thing is assimilated, it is put in our body of knowledge as a part in the whole. *Assimilation*, as used in the preceding paragraphs, has much the same meaning as the Herbartian term *apperception*. Elsewhere in this book *assimilation* is used in a wider application; but the processes described are all synthetic. Thus, in imagining, we build together various elements to make new images; in willing, we weld thoughts and feelings into purpose and action.

### SYNTHETIC METHOD.

The method of teaching, to secure assimilation, should therefore be synthetic. Facts and ideas should be presented as parts to be put together, or to be fitted on to what has already been learned. It is an excellent plan to follow every analysis with a corresponding synthesis. For example, in physiology, after the body has been studied by proceeding from the whole to its parts,—to the several systems, organs, tissues, cells,—the subject should be reviewed in reverse order, from the cells to the whole body. After grammar has been gone over by passing analytically from the sentence to words and their properties, the pupil should then review by beginning with the different parts of speech, and putting them into proper relations in the formation of elements and sentences.

The compound term *analytico-synthetic* is often

used to indicate the intimate connection between the two methods, and shows that analysis should precede synthesis.

### INDUCTIVE METHOD.

The inductive method of teaching closely resembles the synthetic in that it proceeds from the particular to the general, but differs from the synthetic in that it is used as a means of reaching general principles and rules, while the synthetic method is a means of forming concepts and classes.

The inductive method should be used by the teacher in every subject in which principles and rules are to be taught. And in almost all subjects below those belonging to the high school or the college, *definitions* should be developed inductively instead of being given ready-made. Definitions and rules are brief generalizations of many particular cases, and therefore should be arrived at inductively.

**In Arithmetic.**

For example, in arithmetic, the processes in the solution of problems of a particular class should be given and illustrated, and the pupil should be required to use them until he understands them; then he is able, and should be required, to *generalize* these processes into rules. The student will understand a rule thus made by himself. To have him memorize the rules first, though a common practice, is indefensible on psychological grounds. That text-book in arithmetic is to be preferred which gives very few rules, or none at all: the student using such a book is forced to formulate his own rules.

What has been said regarding arithmetic applies with equal force to grammar. Technical grammar, so often made a chaos of formal definitions, rules, and

exceptions, becomes a delightful subject when made an *inductive* study of the *sentence.* It should be presented to beginners through the sentence; for from the structure of sentences all needful definitions and rules of grammar can be generalized, under skillful teaching, by the pupils themselves.

**In Grammar.**

In teaching definitions inductively (synthetically), enough examples of the things (objects or ideas) to be defined should be presented, and the pupils led, by noting carefully the common properties exhibited, to frame a definition that shall include these common properties. For example, by showing a class the function of denominators, the pupils may be easily led to make the definition, "The denominator of a fraction shows the number of equal parts into which the unit is divided." In the same way, a study of the function of the transitive verb in a sentence leads to the definition, "A transitive verb is a verb that expresses action as taking effect upon something."

**Definitions by Induction.**

The principle of the inductive method may be thus stated: *A clear comprehension of processes must precede the statement of a rule: a clear concept of a thing must precede the framing of a definition of that thing.*

## DEDUCTIVE METHOD.

In deductive method, the rule, or principle, or definition, is learned first, and then application is made of it to particular cases. It was a method much in vogue with the old-time schoolmaster; for it enabled him to require memoriter recitations, and, in case a pupil took to asking questions, to silence him with the assurance that "the rule said so." Such a method, persistently followed, dulls the spirit of inquiry and investigation

in any school. It ignores the fact that the rule is not and can not be a *reason*,—that it does not tell *why*, but *how*.

It is wise to use deductive method with advanced pupils only. It is not advisable to present a definition or rule first in an unfamiliar subject, and have the young pupil seek for illustrations and applications. And when a ready-made principle or rule is given to even advanced students, it should not be given as a finality, complete in itself, but only as a guide-post to show the direction the work is to take, or as a proposition to be proved.

## "CULTURE EPOCHS."

Modern method recognizes the fact that the *individual* mind in its development repeats the order of development of the *race* mind.

Mankind, in its progress from a rude and savage state, passes through three broadly marked "culture epochs." In the childhood of the race, myths and legends, accounts of demigods and heroes, abound. All objects in nature are endowed with personality, and natural phenomena are explained as the acts of gods or demons. As the race advances, imagination and superstition are modified by close observation and increasing experience, a beginning is made in empirical science, and the practical arts are established. As progress continues, pure science takes the place of empiricism, and the search for the relations and causes of things gives rise to philosophy and speculative investigation.

Civilized man passes through these three stages of mind growth in his individual life, and the processes of

his education should be in accord with them. For the child there should be fairy stories, fables, the personification of natural forces, and true biography of the world's heroes. For the youth there must be much observing and experimenting, trial of many things, and accumulation of facts in every field of knowledge. For the man there must be investigation and inquiry into ultimate causes,—the why and how of things.

**Chief Principle of Method.** A little reflection will show that all that has been said so far regarding method can be summed up in the one principle: *The processes of education should conform to the order of mind growth.*

## OTHER PRINCIPLES DEDUCED.

From the general principle just stated, and from the definition of education given in Chapter I., a few special principles and rules of education are next deduced.

I. *All the organs of the body should be developed and trained to proper functioning.* The application of this principle would change current athletic practices, and put physical education where it belongs,—in charge of a teacher trained for that purpose, and with proper and sufficient apparatus for his use. Strict application of the principle would also rightly answer a question that has not yet been as often raised or as strenuously pressed as it ought to be, "Why should not the *left* hand be made as serviceable as the *right?*" There is no valid reason for not training the left hand to be as efficient as the right: man should be *ambidextrous.*

**Physical Education.**

II. All *the faculties of the mind should be developed and trained.* The practice of this principle takes the

emphasis of teaching off of memory, where it has so long been placed, and distributes it over the whole series of mental activities. The recognition of the necessity for an all-round development is one of the corner stones of modern education.

Intellectual Education.

The principle of use is a most important companion principle to the one just given, and may be phrased thus: *Faculties, like muscles, grow strong by use: therefore do nothing for the pupil that he can do for himself.* The beefsteak the teacher eats gives the pupil no nourishment. So, the problem solved, the word parsed, the sentence diagramed, by the teacher, gives the pupil no strength.

This principle does not mean, be it carefully noted, that the teacher shall not show the pupil *how* to work, but simply that the pupil shall do his own work when he has learned how, and that he can best learn how by doing it himself under skillful and sympathetic direction.

III. *The senses must be developed early, and trained to accurate and quick observation of worthful facts.*

Workers in the field of science are not the only ones who need the power of ready and correct observation. The essayist, the novelist, the poet, the artist, who are popularly supposed to be removed from what are called practical affairs, must be the closest and most accurate of observers. Ruskin's wonderful power of description, and infallible discrimination as an art critic, were due to habits of minute observation of nature, formed in his boyhood.

IV. *Memory must be developed by use according to the laws of association and the law of interest.*

The more interesting associations there are for any

idea, the more readily can it be retained and recalled. Since the interest of children is aroused mainly through sense percepts, and since they most readily form sense associations, as many of the senses should be called into activity as possible in teaching them. For example, in reading and spelling, a word should be seen, heard, uttered, and written.

*What? When? Where?* are the questions for cultivating the ability to observe and recall.

V. *Judgment must be developed and trained by drawing conclusions from observation and experience, and by correlating and unifying objects of knowledge.*

Activity of judgment is manifested by children earlier than we are apt to suppose. The child of two or three years of age begins to classify objects and to search for the reason of things. *Why?* and *How?* are the questions for training judgment.

The teacher must be careful to furnish knowledge-material *no faster than it can be assimilated.* The mental digestion can become clogged as readily and with as serious results as can the physical.

VI. *Imagination is to be cultivated through observation, and by descriptions of places and things that the pupil has had no opportunity to observe.*

These descriptions may be read or told by the teacher to the pupil, or they may be read by the pupil for himself, or they may be told or written by the pupil. No plan for cultivating the imagination is complete that does not include much oral and written composition, and much reading of good literature.

The high function of imagination in creating ideals of both ethical and non-ethical conduct must not be lost sight of.

VII. *Judgment and taste should be trained early to*
**Æsthetic Education.** *recognize and appreciate what is beautiful and refined.*

Environments at home and at school are the chief agencies in æsthetic education: it cannot be had from books or set lessons.

Like all the more spiritual tastes and feelings, the æsthetic taste is best cultivated indirectly rather than by direct instruction. Nature, art, and literature are the three influences that form and refine the love of the beautiful.

**Moral Education.** VIII. *The ethical nature must be developed and refined through the motives.*

Right doing is mainly a matter of *feeling*, not only with children, but with adults. One rarely does right because he *knows* (intellectually) what is right: he must also *feel* the necessity of right conduct.

If man always found in rational conviction sufficient motive to both non-ethical and ethical action, he could well dispense with a majority of his feelings. He would not, for instance, after reaching years of discretion, need the physical appetites or feelings of physical comfort and discomfort, to compel him to repair the waste of the body or to protect it against accidents. So he would need no motive to ethical conduct except the decision of judgment that certain acts are right. But the simple conviction that a thing is right — which is the highest motive to doing right — is so ineffective, that it requires the impelling force not only of conscience, but of a host of other feelings, to induce men to follow righteousness.

The teacher, the preacher, the lawmaker, all who would guide and reform humanity, are forced to run

the scale of motives from the highest to the lowest. Through the motives the will is brought to act, — to inhibit, to determine, to execute.

Most luckily there can be no *text-book* on morals, and therefore moral education cannot easily become, in the hands of the teacher, a daily lesson-grind. The teacher himself, if his life is right, is the best daily lesson in morals.

IX. *The will must be developed through interest, so that it can quickly and steadily focus the mind in attention.*

The power to attend is perhaps the highest intellectual power, and no effort should be spared in cultivating it in the young. The effect of it, or the lack of it, is far-reaching in every sphere of human activity. It is through the power of the will to compel attention that it becomes able also to choose, determine, and execute.

Development of the will means also the full cultivation of the motives. The teacher should choose what motives he will have dominant in school, and early set about *to make them dominant.* To do this is to develop will, and to develop will is to build character.

**Thoroughness.**

X. *Thoroughness is often best secured by indirect teaching.*

All teachers believe thoroughness to be essential, and it is; but the way most used to secure it is not always the best. Repeated drilling upon lessons until the facts are well fixed in memory, important as it is, does not secure true thoroughness; for to know "by heart" is not necessarily to be thorough.

To be thorough is *to understand;* and a pupil cannot understand a lesson or a subject fully until he has some

knowledge of the next higher one. A student cannot be thorough in arithmetic, for example, until he knows something of algebra and geometry. The pupil should be passed to the next lesson or the next higher subject as soon as he knows the facts, and understands the principles, of the lower study *sufficiently to enable him to apply them in the higher*.

This seems self-evident, but it is not so treated in practice. Pupils are kept grinding over the same grist in order to become "thorough." But they get further away from true thoroughness at each going-over. It is better for the pupil to go into a new and more advanced subject, even if he finds it necessary to refer frequently to the books or lessons just laid aside. Not only does he, in a new subject, have both the stimulus of new facts to call forth greater mental activity, and the helpful consciousness of progress, but he is also forced to use his partially acquired knowledge of the less advanced subject in mastering the higher. The mind is thus brought to a tension *above* what is necessary for the comprehension of the lower study, and so more readily becomes thorough in it.

The teacher is losing time and wasting energy when he tries to produce thoroughness by direct teaching alone. To illustrate: A pupil should not be kept on the multiplication table till he can say it all without a slip, but as soon as he knows the table, or a part of it, fairly well, he should be put to work on simple problems in the solution of which multiplication is a necessary but secondary process. As soon as the pupil has some familiarity with geography, he should have history presented to him in a way that *assumes* his knowledge of geography.

Illustrations.

As long as the multiplication table is taught as an end in itself, the mind of the learner will be keyed up only to that point; but when a problem is set that involves multiplication as a *subsidiary* process, the mind becomes keyed to the more difficult work, and thus thoroughness is *indirectly* reached in the minor matter. Constant drilling in geography would result in strong aversion to that subject; but if history and general reading be so taught as to demand accuracy of geographical knowledge as a subsidiary matter, the result must be true thoroughness in geography.

In the truth of this principle lies the excellence of supplementary reading. If the pupil is kept in the second reader, for example, until he can read it through without miscalling a word, he is a loser thereby. If put to work in supplementary reading matter, he shows marked improvement, because he now reads for the *thought*, and the mere calling of words becomes of secondary importance.

**Sympathy the Chief Element.**

But after the last word is said in methodology, this truth remains: *sympathy* is the chief element in the success of the real teacher.

He who lacks sympathy for the learner in his efforts, in his failures, in his successes, in his struggle for self-mastery, will fall short of the best teaching. Old teachers who have grown out of memory of their own early difficulties, teachers who teach "for revenue only," and those who have blundered in their choice of the teacher's profession, usually lack this element.

There is no higher work than teaching; and he who does not appreciate this truth, who does not love to see mind grow and to help it grow and know, has no rightful place in the ranks of those who are consecrating the schools to the cause of humanity.

# CHAPTER XXI.

## METHODS AND RECORDS OF MIND STUDY.

IN Chapter I. a very brief mention was made of some methods of studying mind phenomena. In succeeding chapters an attempt was made to discuss a few results of mind study and their specific application to education. It is hoped that the teacher, and possibly others whose work is both with and upon mind, have found enough therein to quicken an interest in the more detailed description which this chapter presents, of the observational method of studying mind, and recording the results for the teacher and the sociologist.

**Classification of Mind Studies.**

Dr. Hall, one of the most earnest investigators of mind growth, suggests that the studies made by physicians, anthropologists, sociologists, parents, and teachers in this field, should be grouped under (1) *studies of psychogenesis*, or mind beginnings, in children up to three or four years of age; (2) *paidology*, or child science, a study of the child up to eleven or thirteen years of age; (3) *ephebics*, or the study of youth.

These are rather high-sounding names, but it is doubtful whether anything of great value has been done or will be done under them that has not been done in a simple and very effective way by sympathetically observant teachers for a great many years past. A reading of what has been written latterly upon the subject of mind study reveals a tendency to lay

rather too much stress upon psycho-physic investigation. The gathering and publishing of mere statistics of weight, size, and other physical characteristics, seem to engross too much attention. Nothing seems too trivial to be made matter of record, if it can be measured or weighed. The zeal of some of the present-day investigators carries them to almost absurd extremes. Judging by the very solemn way in which so many trifles are announced, it would seem that some men and women had never observed children with any particularity or interest until induced to do so through the fad for studying psychology with a tapeline.

**Too much Stress on Statistics.**

Thousands of school children in Boston, St. Louis, Milwaukee, and other cities, have been weighed, and measured as to height, size of chest, size of head, and rate of growth. The results have been tabulated with statistics of age, sex, parentage, occupation of parents, etc. From the masses of facts thus accumulated, but few definite conclusions have been drawn; in fact, as might be expected, different conclusions have been drawn from the same data. Some, if not most, of these inductions, can be reached by sympathetic and observant teachers, from the daily appearance, play, conduct, and class work of their pupils, without subjecting them to any kind of physical measurement. The chief value of the current free discussion of this subject lies in the opportunity it affords for individual observers to become more conscious in their observations, to record and compare results, and thus to work together toward the production of a body of classified psychological data from which inductions may be made that will benefit all.

**No special Need of Physical Measurement.**

Some of the conclusions already reached, while doubtless correct and to some extent interesting, seem to have little or no value for the teacher. For example, what pedagogical worth has the fact that the children of manual laborers are lighter and shorter, age for age, than those of merchants or lawyers? What use can the teacher make of the knowledge that American children are a trifle lighter than children of foreign parentage? We get very little from the use of the scales, tapeline, and calipers, that we do not already know. At least a little observation will reveal it to us with an exactness sufficiently close for the practical needs of the teacher. A teacher does not have to study medicine or anthropometry to discover that a child is oversized or undersized for his age, or that he has defective sight or hearing. He does not need either a physician or a psychologist to tell him to put a pupil of poor hearing closer to the teacher's desk than those of normal hearing.[1] We know that a healthy child is active, vigorous, and heavier than a sickly child of the same age, and that as a rule he can learn better than a child of enfeebled health. The physiological psychologist has discovered nothing better than that empirical knowledge.

**Facts must be gathered and generalized.**

But in every new science there must be a long period of fact collecting before there can be any trustworthy announcement of new principles; and in collecting facts there will be, of course, much chaff gathered with the grain.

[1] The following is quoted from an address by a physician to a body of (presumably) intelligent teachers: "It is particularly important that the teacher should notice this form of deafness [due to abnormal growth in the back of the nose]. Children deaf should be placed *near* the teacher."

The criticism of the last few paragraphs is not directed as much against the making and recording of many and various observations upon children and adults, as against the too prevalent practice of announcing facts as valuable in themselves, instead of patiently generalizing them into helpful principles. Darwin gathered and studied facts for some twenty years before he announced his development hypothesis: the psychophysic investigator is prone to rush into print every time he finds a new fact, or rediscovers an old one.

**No Working Formula possible.**

It will surely take some time to work out a usable formula that shall involve the factors of size, weight, rate of growth, age, sex, and nativity. There are so many other factors of equal or greater importance that enter into the practical solution of educational problems, that it may be seriously questioned whether anything like a formula can ever be worked out. It does not seem likely that we shall ever be able to say that skill in mathematics varies as the weight of the pupil; or that aptitude in natural science is directly as the square of the chest measurement!

**Psychic Observations Valuable.**

But there can be no doubt that the right kind of observations on children (psychic rather than psychophysic), systematically carried on and carefully recorded, are of great value not only in the slow development of acceptable pedagogical laws, but also in the immediate and everyday work of the average teacher.

The teacher should be a sociologist also, and should teach as a sociologist, as one whose work is not for the individual alone, but for the community,—for the individual as a member of society. In properly directed mind study he will find much that can help him, not only in

his service for individual pupils, but in his work for them as members of the social organism. Even the most absurd things that have been done and written in the name of "the child" will be justified, if no other good should result from the greatly quickened interest in child study that has marked the last decade or two than the focusing of the attention of laymen, educators, and the everyday teacher, upon *the child* as the center of educational theory and the object of educational practice.

**Classification of Observations.**

Observations upon children should be made and recorded by both parents and teachers, and may be classified under the general heads of *abnormal characteristics* and *normal characteristics*. Under *abnormal characteristics* may be placed observations of (1) overgrowth or undergrowth, with or without specific disease; (2) defective sense equipment (defective sight, hearing, etc.); (3) precocity or unusual dullness of all or of any one of the mental activities. Under *normal characteristics* should be placed observations upon the natural, healthy growth of the different bodily and mental organs and faculties.

Observations upon the irregular or defective bodily growth, or upon any abnormal physical condition of children, can of course be made accurately only by a physician. In some of the large cities of both Europe and America, physicians are employed whose business it is to make examinations and tests at stated intervals upon the physical condition of the school children. The best that can be done in that direction by the average teacher, is to be alert to discover symptoms of defective sense perception or of disease, and immediately to call the attention of the parents to any aberrancy. Some suggestions as to simple tests for

defects of the sensorium have been made in previous chapters, and doubtless enough has been said to enable the teacher to plan other exercises and tests suited to the needs of individual cases with which he may have to deal.

Teachers will find more that is valuable and helpful in observations made upon normal cases of development than upon abnormal ones. If normal types be studied as they should be, any deviations therefrom will become sufficiently evident. As Rooper says, "It is the normal action of child mind that is being studied, and not the abnormal and remarkable. The abnormal should only be recorded as throwing light on the normal, and should be distinctly noted as abnormal."

**Normal Types more Important than Abnormal.**

The study of children should begin in the home, and almost at the hour of birth. Mothers have the richest opportunities for observation and record of the growth of body and mind in children. If they would everywhere systematically undertake this work, much could be done in accumulating facts that would have the highest value for both the sociologist and the teacher.

**Observation in the Home.**

Some excellent books have been issued, setting forth the results obtained by careful observation made upon infants. Much of value can also be had by careful gleaning from the mass of current literature on the subject of child study, albeit a great deal of this is of questionable worth to the teacher.[1]

[1] The reader is referred to the following, given as illustrative of the literature on the subject of psychic and psycho-physic investigation: —

Wundt's Lectures on Human and Animal Psychology. (New York *Macmillan & Co.*)

## Observation and Record Forms.

The following forms are intended to be suggestive, and to indicate the manner of recording and preserving observations made upon children of different ages. I want again in this connection to lay stress upon the fact that mere statistics are of little or no value: it is what can be drawn from them that is to profit the student of mind phenomena; and, in order to have any worth for this purpose, they should be recorded as the observations are made, and with the exactness of the investigator who is searching for truth in the facts, and not for facts to support a preconceived theory.

The first form is given partly filled out, the more plainly to indicate to those unfamiliar with the work the manner of making such records.

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Warner's Lectures on the Growth and Means of Training the Mental Faculties. (*Macmillan.*)

Cattell's Course in Experimental Psychology. (*Macmillan.*)

Baldwin's Mental Development in the Child and the Race. (*Macmillan.*)

Tracy's Psychology of Childhood. (Boston, *Heath & Co.*)

Perez' First Three Years of Childhood. (Syracuse, N. Y., *C. W. Bardeen.*)

Preyer's The Mind of the Child. (New York, *D. Appleton & Co.*)

Transactions of the Illinois Society for Child Study. (Chicago, *Werner Co.*)

Shinn's Notes on the Development of a Child. (Berkeley, Cal., *University of California Series.*)

Peckham's Growth of Children. (In Report of Wisconsin Board of Health, 1881.)

The Report on Experimental Psychology in Education. (In the Proceedings of the International Congress of Education, held at Chicago in 1893.)

The Psychological Review, New York.

The Pedagogical Seminary, Worcester, Mass.

The American Journal of Psychology, Worcester, Mass.

Studies from the Yale Psychological Laboratory, New Haven, Conn.

## FORM I.

### *For the First Four Years of Childhood.*

(Psychogenetic.)

Observations made and recorded by *Mrs. Jno. Brand.*

Observations made upon *James Brand.*

Date of birth, *Jan. 14, 1891.* Sex, *Male.* Parentage, *American.* Father's occupation, *Merchant.* Locality (city, village, country), *Village.*

---

(If there is any abnormality, note it under the proper head.)

A. SENSE PERCEPTION.

I. *Sight.*

1. First discrimination of light and darkness, *Jan. 25, at 12 days. Indicated by frowning and blinking at light, and fretting at the dark.*

2. First following of an object with the eyes, *Feb. 4, at 22 days. Indicated by turning the eyes sidewise and up and down to follow a moving lamp.*

3. First selection of colors, *March 18, at 2 mos. 11 days. Indicated by gaze being most attracted by a yellow scarf, among several of different colors.*

4. First selection of objects by sight alone, *May 6, at 4 months. Indicated by volitional efforts toward a watch among several objects held near him. (This needs further testing.)*

5. First recognition of persons by sight alone, *June 10, at 5 mos. 7 days. Indicated by turning to his mother from a stranger who was holding him.*

Remarks.

II. *Hearing.*

1. First evidence of sensitiveness to sound.
2. First attempt to locate sound.
3. First discrimination between harmonious and unharmonious sounds.
4. First evidence of enjoyment of sound made by himself.
5. First recognition of repeated sound.

Remarks.

III. *Tasting.*

1. First evidence of distaste.
2. First discrimination or preference in taste.
3. First recognition of repeated taste.

Remarks.

IV. *Smelling.*

1. First evidence of sense of smell.
2. First discrimination or preference of odors.
3. First reference of odor to its cause.
4. First recognition of repeated odor.

Remarks.

V. *Touch.*

1. First evidence of preference by touch.
2. First evidence of recognition through sense of touch.
3. First evidence of being aware of his own hands or body as his own.

Remarks.

VI. *Temperature sense.*

1. First evidence of pleasure or pain from temperature.
2. First reference of warmth or cold to its cause.

Remarks.

VII. *Muscular sense.*

1. First evidence of ability or desire to put hand to mouth deliberately.
2. First grasping of objects and carrying them to the mouth.
3. First apparent consciousness of muscular power.

Remarks.

B. The Feelings.

1. First crying that is not reflex.
2. First smiling or laughing that is not reflex.
3. First evidence of pleasure.
4. First evidence of surprise.
5. First evidence of fear, and its cause.
6. First evidence of imitativeness.
7. First evidence of æsthetic taste.
8. First evidence of conscience.
9. First feelings regarding Deity or the hereafter.
10. First evidence of pity or sympathy.
11. First evidence of affection.
12. First forms of expression of feelings,— by facial movements, by gestures, by sounds.

Remarks.

C. The Intellect.

1. First evidence of memory, in recognition.
2. First evidence of selective judgment.
3. First evidence of intuition of cause.
4. First evidence of intuition of self as different from external objects.
5. First judgment of right and wrong. (Discriminate carefully between cases in which the child was *told* and cases in which he seemed to form *original* judgments.)
6. First attempt at expression, in any form.
7. First attempt at talking.
8. First use of personal pronouns.
9. First consciousness of any difference between boys and girls.
10. First manifestation of distinctively boyish or girlish traits

Remarks.

D. IMAGINATION.

1. First evidence of imagination.
2. First evidence of the child's endowing inanimate objects with personality.
3. What kind of stories does the child prefer?
4. What are the child's ideas of God? Of heaven?

Remarks.

E. THE WILL.

1. First evidence of will *to do* some thing.
2. First evidence of will as *inhibitive* (in self-control).
3. First evidence of will in ethical action.

Remarks.

This form is intended for popular rather than for expert use, and it is not expected that much deliberate experimentation will be done, though some would prove very interesting and helpful to even the non-expert.

In the "remarks" most careful note should be made of any *hereditary* peculiarities. Points under this would have especial value in aiding the solution of the problem whether peculiarities of any kind acquired by the parents can be transmitted to the children. Under "parentage," "father's occupation," and "locality" the social and industrial environment of the child should be fully stated. It should be noted whether the town is a mining, or manufacturing, or purely commercial town: whether the country is fertile or poor, and what the chief agricultural interest is, etc. If the mother also is engaged in money earning, either in the home or out of it, that fact should be noted. All these are the factors which, as has been said before, make it extremely difficult, if not impossible, to reach, from such data, any widely applicable generalization that will have the force of law.

## FORM II.

### *For Children from the Fourth to the Thirteenth Year.*

(Paidological.)

Observations made and recorded by ............

Observations made upon ............

Age.... Sex.......... Parentage.......... Father's occupation ......... Locality (city, village, or country)...........

What sort of school (public or private) are the observations made in? ..........

What sort of a school (public or private) has the pupil been attending? .........

---

A. Physical Condition, — normal, or abnormal?

If abnormal, in what way?

B. Psychic Activities.

I. *Observation.*

1. Are all the senses alert? Quick, or slow?
2. How many objects can be seen at one glance?
3. What sense is most acute? Why?
4. What sense is least acute? Why?
5. What objects of each sense are most preferred? Why?
   (1) Sight.
   (2) Hearing, etc.
6. What kind of knowledge does the child have most of on entering school?

II. *Memory.*

1. What sense images are best retained and recalled?
2. What proportion does retention bear to acquisition? (Does the child memorize quickly and forget quickly, or memorize slowly and retain well?)
3. Is the verbal, or the logical, memory stronger?
4. In either case, what class of facts is best memorized and retained?
5. In what way is *association* most effectively done? (By resemblance, or cause, or contiguity, etc.)
6. Does memory recall quickly?

III. *Judgment.*

1. Is detection of resemblances quick and accurate?
2. Is discrimination quick, or slow? Are *true* differences noted?

3. Is mathematical, or scientific, or ethical judgment most prompt and reliable? (Does the pupil perceive mathematical relations most readily, or classifications of natural objects, or why certain acts are right or wrong?)
4. What are the things considered wrong, and why?
5. Is the child prone to study a thing out for himself, or does he rely on being told?
6. About what are questions most asked?
7. Is the child disposed to act independently on his own conclusions?

IV. *Imagination.*

1. In what direction is the imagination most active?
2. Does the child think most in images, or in words?
3. What does he prefer to draw?
4. Is he able to make a vivid mental picture, from the description given him, of some place, person, or thing?
5. Is he inclined to exaggeration in descriptions? If so, what additions are made to the facts?
6. In what sort of scenes or activities does he usually picture himself?
7. What sort of stories does he prefer to read or hear?
8. Is the child inclined to reverie, or is imagination creative? (Does he make up good stories, work out his ideas by drawings or models, etc.?)

V. *The Feelings.*

1. What most readily arouses admiration?
2. What most readily excites shame?
3. Is ambition strong?
4. Is there jealousy or envy?
5. How is æsthetic feeling manifested?
6. Is there a strong sense of humor? What excites it most?
7. Is the child sensitive? In what way?
8. Is he cowardly, or brave,—physically, morally?
9. Is he cruel to young companions or to animals?
10. In what form is patriotism manifested?
11. Is the temper quick, or slow? Is anger soon over, or does the child "nurse" his anger?
12. Is the child sullen or subdued, obstinate or repentant, under punishment?

13. What is the strongest motive?
14. What form of punishment is most effective?
15. Is conscience active?
16. What motives lead most to deception or lying?

VI. *The Will.*

1. Is the child obstinate?
2. Is he perverse — inclined to do things he is told not to do — for no other apparent reason than that the command is given?
3. Is there perseverance in what has been undertaken?
4. Does the will *inhibit* readily,— is there good self-control?
5. What is his power of voluntary attention?
6. Does he readily influence his companions?

VII. *Expression.*

1. Are new words and forms of speech readily learned and correctly used?
2. Is utterance quick, or slow?
3. Do live facial expressions and gestures accompany speech?
4. Is spoken, or written, expression the more correct and ready?
5. Is there any evidence of manual dexterity? If so, in what direction?
6. Does the child draw? Naturally, or as the result of teaching?

## BRIEFER FORMS.

The forms just given are intended, as they show, for rather detailed work, which may serve to aid in the discovery of general laws or principles, as well as to produce immediate results. It is advisable, in most instances, to select *types* of children differing in age, parentage, sex, etc., and make these detailed observations only upon them. The results will be fully as satisfactory and as useful for purposes of generalization as if every child should be put on record, and the work can be more quickly done.

A little has been done toward making similar but briefer observations and records serve as a means of watching and guiding the growth of children in school, and as the basis of promotion through the classes and grades. A very simple form, slightly changed from the one used in the schools of Bellevue, Ky., will serve as an example.

*Name*.............................. *Age*...........................
*Grade*.............................. *Health*...........................
*Temperament*.............................. *Parentage*...........................
*Recorded by*..........................................................

| | Date. | Date. | Date. | Date. | Date. |
|---|---|---|---|---|---|
| 1. Observation | | | | | |
| 2. Memory, Verbal | | | | | |
| 3. Memory, Logical | | | | | |
| 4. Imagination | | | | | |
| 5. Quickness of Conception | | | | | |
| 6. Originality | | | | | |
| 7. Sense of Right | | | | | |
| 8. Self-Control | | | | | |
| 9. Influence on others | | | | | |
| 10. Language | | | | | |

11. Subject of Greatest Interest..........................................
12. Subject of Least Interest..........................................
13. Greatest Mental Deficiency..........................................
14. Greatest Physical Deficiency..........................................
15. Leading Feeling through which to govern..........................................

REMARKS. — 1. Grade pupils, Excellent, Medium, Poor; or Excellent, Medium, Weak; or Strong, Medium, Weak, as the appropriate topic may require.

2. Objects: Differentiation; individual work. Note the characteristics of pupils, and plan for the rounded development of the individual.

An even simpler record was used in the Platteville, Wis., State Normal School. The following illustrations, records of three different pupils, are quoted from an article on "Child Study," by Miss Mary E. Laing, in the "Forum" of May, 1894:—

Oct. 1.— Age, 8 years; good mind; sensitive, reticent, sometimes covers this with an air of bravado; a careless worker. Jan. 17.— Improved habits in work, in conduct, and in thought; realizing his possibilities rapidly. Mar. 18.— Has been doing good, even work; much interested in natural science. May 24.— Not working up to the level of his power; careless about form; all hand work poorly done; frequent lapses in attention; a child who lives in a world of his own.

Oct. 12.— Age, 10; dreamy and absent-minded; a good thinker when aroused; he has never done his best; does not know what real work is. Jan 15.— Excellent improvement; more at one with his class; less absent-minded and listless; a child with a good mind, but with irregular mental habits; inclined to jump at conclusions. Mar. 22.— He has made little gain during the last quarter; he is still inclined to inattention and listlessness. May 24.— Work still uneven, though much improved; he observes well, reasons well; better habits of attention; improved bearing.

Oct. 20.— Age, 15 years. Good natural ability, with good general knowledge; an observing mind; thoughtless in manner; always truthful. Jan. 25.— Has improved in work, but not in self-control; inclined to try for leadership among his boy companions. Mar. 24.— No moral growth; inclined to think too well of himself; marked symptoms of forwardness and conceit.

It is easy to see the direct benefit to the individual pupil of such records, but there is even greater benefit to the teacher. Miss Laing says, "Everything, then, that helps the young teacher to become a practical daily student of child nature, is for him the best possible training in the science and art of education." Principal Russell of Worcester, Mass., who devised a similar plan of observation and record, also says, "The practice of child study is directly for the sake of the

teacher, indirectly for the sake of the child, and incidentally for the sake of science." Of course, any benefit the teacher derives from such work must eventually reach the child also.

Children should be observed under as many circumstances as possible, — studying, reciting, working, playing, etc. Anything is of value that helps to show how the mind is quickened into activity, the order of development of the faculties, and the ways in which mental activity is manifested.

## UNCLASSIFIED ITEMS OF OBSERVATION.

Besides the items indicated in the preceding forms, there are various others, not readily classifiable, which it is profitable to note. Some of these are suggested under the following heads: —

I. *Does a pupil do better work under individual teaching, or in a class with his fellows?*

Not a little is being said regarding the necessity of individual teaching. The experiment of abolishing class work as such, and of letting each pupil advance as rapidly as his individual effort, directed by the teacher, would permit, has been tried to some extent; but much more general experimentation is needed to establish a principle or a practice in this matter. If a teacher does not feel justified in trying it with the whole school, there are often several pupils of irregular advancement with whom the plan of purely individual teaching might be properly undertaken. A right answer to this question will be a solution of the problem that faces every city teacher and the majority of country teachers; viz., "How can the brightest pupils in a grade or class be kept profitably busy, without overworking or discouraging the duller ones?"

II. *How may the rhythm in the work and conduct of the individual, class, and school, be accounted for?*

Most teachers have observed that there is an alternation of good and bad work, good and bad behavior, in the individual pupils, in classes, and even in the whole school. One day or one week excellent work is done, excellent behavior is the rule; the next day or the next week there seems to be a general "letting down," work is poor, and conduct is abominable. So far as the matter has been studied, the explanation seems to be that this rhythm is due to more or less regularly periodic fluctuations in the *power of attention*. But this merely shifts the question, and does not answer it. More knowledge is needed to determine how far such rhythm is psychical or physical, to what extent it is due to weather changes, how much of it is due to the element in human nature which induces one to be lax and self-indulgent after a successful effort in any direction.

III. *Is it better that the sexes at the period of adolescence should be educated in separate schools?*

Can girls and boys at this period do their best work in the same classes? Should there be any change in the quantity or quality of work demanded of them at this stage of life? Is the mind more, or less, active than at other periods?

IV. *If the boys and girls are taught together, what difference, if any, is observable in the quality of their work?*

Is there a difference in preference for certain studies? Is there a difference in conscientiousness about work? Are boys, or girls, more exact? What differences are there in the *ambitions* and trend of *ideals* of the two sexes? In short, every point should be noticed that is

likely to throw any light on the psychology of sex. If answers can be found to questions III. and IV., they will have a profound sociological as well as pedagogical interest and value.

No sound objection can be offered to the co-education of both sexes in childhood; little, if any, can be offered against their co-education as adults, in the college and university; but the question has not yet been conclusively answered, whether there should be full co-education all the way from the primary to the university.

Then, too, another question arises in this connection; and that is, "What difference in the method or substance of education should be made, in view of the different duties which men and women must necessarily render to society?" This question has hardly been asked yet, and no decided steps have anywhere been taken, so far, toward a solution of the problem.

V. *In what ways can the time daily spent in school be reduced, to the pupils' advantage?*

Another question in this connection awaits an answer; and that is, "Are not yearly vacations too long?" Every teacher knows that even a short vacation gets the pupils out of working harness, and some time is needed at the opening of school to get them into habits of study. Could not some work be assigned so interesting that it would be done during vacation, and thus keep the mind interestedly active? This could certainly be done if there were the connection there ought to be between school work and the pupil's normal life. It is believed that colleges could, under a more compact organization and with better teaching methods, do more and better work in three years than they now do in four.

## RECORD OF METHODS.

There is probably no grade of school in which the teacher would not find it an excellent plan to keep records—made at regular intervals, as often as convenient—of the special methods by which he made various difficult points clear in different branches, by which he succeeded in arousing the interest of a dull or indifferent student, by which he reached an obtuse moral nature. These records should show the practical results of the more detailed series of observations; and by correlating and preserving both together, and adding to them, the teacher can make for himself a most valuable pedagogy. It is very true, of course, that making such observations and records will take patience and perseverance, but no more than does the current system of grading.

## MIND STUDY VS. GRADES AND EXAMINATIONS.

It is believed that the use of observations and records in mind study in school work, both for securing a rational basis for true methods of management and teaching and for determining the promotion of pupils, is much to be preferred to any system of set examinations, and of recording examination results in figures; for, although there is an air of mathematical certainty about a grade in figures, yet it is plain that the "personal equation" of the teacher or examiner must enter into every estimate, and therefore into every grade, he makes. There can be no greater error on account of the "personal equation," then, in a system of marking and promotion by careful observations upon the activity and growth of the mental powers, than there is in the preva-

lent system of "per cents." Then, too, even the best system of daily marking or of examining makes but little discrimination between what may be called *growth values* of the different mental powers; or at least it almost necessarily puts the greatest stress on the *memory*, where it certainly does not belong.

It is good that the day has come when it is at least as interesting to study the child—the growing mind—as it is to study geological strata, or chemical reactions, or the movements of the stars. It is the child that is taught, not the subject: the pupil is of more value than many text-books. Surely we are getting closer to fundamentals when we study that which knows, and how it knows, as carefully as we study that which is to be known.

# INDEX.

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